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Series XI. Number IV.

BULLETIN

OF THE

University of Notre Dame

NOTRE DAME, INDIANA

GENERAL CATALOGUE

1915-1916

PUBLISHED QUARTERLY BY THE UNIVERSITY

THE UNIVERSITY PRESS
APRIL, 1916

Entered at the Post Office, Notre Dame, Indiana, as second class matter,
July 17, 1905

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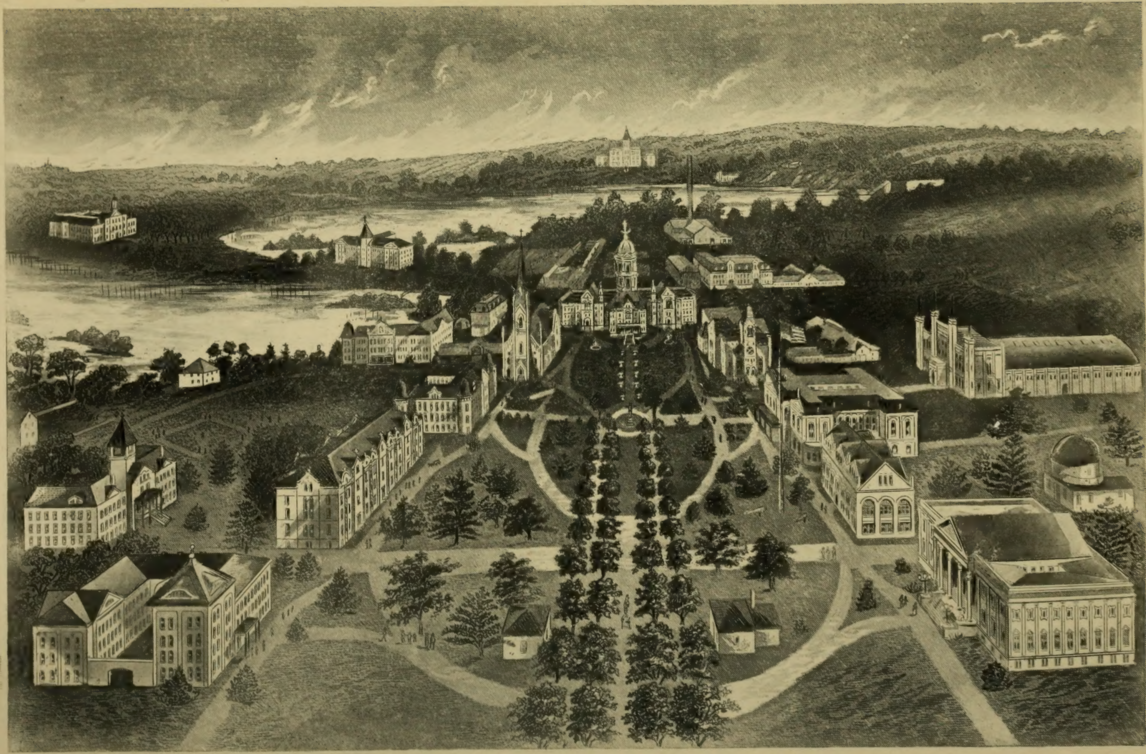

UNIVERSITY OF NOTRE DAME
Notre Dame, Indiana

Series XI. Number IV.

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DIRECTORY OF THE UNIVERSITY

The FACULTY—Address:

THE UNIVERSITY OF NOTRE DAME,
Notre Dame, Indiana.

The STUDENTS—Address:

As for the Faculty, except that the name of the Hall in which the student lives should be added.

There are at the University a Post Office, a Telegraph Office, a Long Distance Telephone, and an Express Office.

The University is two miles from the city of South Bend, Indiana, and about eighty miles east of Chicago. The New York Central, the Grand Trunk, the Vandalia, the Indiana, Illinois & Iowa, the Chicago and Indiana Southern, and the Michigan Central Railways run directly into South Bend. A trolley line runs cars from South Bend to the University every fifteen minutes.

The Latitude of the University is 41 degrees, 43 minutes, and 12.7 seconds North, and 86 degrees, 14 minutes and 19.3 seconds West of Greenwich.

The elevation is about 750 feet above the sea.

From this it is clear that the location is favorable for a healthful climate where students may engage in vigorous mental work without too great fatigue or danger to health.

CALENDAR FOR 1916-1917

	1916	
September	11.	Entrance Examinations and Examination of Conditioned Students in the Preparatory School. Registration.
	12.	Preparatory Schools Open.
	18.	Entrance Examinations and Examination of Conditioned Students in the Colleges. Registration.
	19.	Colleges Open.
	20.	Reading of University Regulations in all the Halls.
October.	13.	Founder's Day.
	28.	Annual Retreat begins in the evening.
November.	1.	Feast of All Saints. No Classes.
	15, 17.	Mid-Term Examinations.
	30.	Thanksgiving Day. No Classes.
December.	2.	The William P. Breen Medal Orations.
	8.	Feast of the Immaculate Conception. No Classes.
	20.	Written Test in all Classes.
	21.	Christmas Vacation Begins.
	1917	
January.	5.	Classes Resume.
	30, 31.	Term Examinations.
February.	2.	Second Term Begins.
	22.	Washington's Birthday. No Classes. Presentation of Flag by the Senior Class.
March	17.	St. Patrick's Day.
	19.	St. Joseph's Day.
April	8.	Easter. No Easter Vacation.
	9.	Easter Monday. No Classes.
	13, 14.	Mid-Term Examinations.
May	20.	Latest Date for Handing in Prize Essays and Graduating Theses in all the Colleges.
	30.	Decoration Day. No Classes.
June	3.	The Patrick T. Barry Medal Recitations. The Joseph A. Lyons Medal Recitations.
	4, 5, 6.	Examinations of Candidates for Graduation
	6, 7.	Examinations in Preparatory Schools.
	10.	Baccalaureate Sermon. Blessing and Hoisting of Senior Flag. Meeting of the Alumni.
	11.	Commencement. Bachelors' Orations, 10:00 a. m. Commencement Address and Graduation Exercises, 8:00 p. m.
	9, 12.	Examinations in the Colleges.

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GALLITZIN FARABAUGH, A. B., LL. B.,
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*Died November 10, 1915.

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UNIVERSITY OF NOTRE DAME

The University of Notre Dame was founded in the year 1842 by the Very Reverend Edward Sorin, the late Superior General of the Congregation of Holy Cross. In an act approved January 15, 1844, the Legislature of Indiana gave the University power to grant degrees. The beginning of this act is:

"*Be it enacted by the General Assembly of the State of Indiana*, that Edward Frederick Sorin, Francis Lewis Cointet, Theophilus Jerome Marivault, Francis Gouesse and their associates and successors in office be, and are hereby constituted and declared to be, a body, corporate and politic, by the name and style of the 'University of Notre Dame du Lac,' and by that name shall have perpetual succession, with full power and authority to confer and grant, or cause to be conferred and granted, such degrees and diplomas in the liberal arts and sciences, and in law and medicine, as are usually conferred and granted in other universities in the United States, provided, however, that no degree shall be conferred and diplomas granted, except to students who have acquired the same proficiency in the liberal arts and sciences, and in law and medicine, as is customary in other universities in the United States."

UNIVERSITY BUILDINGS

THE ADMINISTRATION BUILDING

The dimensions of this building are 320 by 155 feet; it is five stories in height and is surmounted by a dome 207 feet in height. The executive offices, two study-halls, some dormitories and class rooms and the dining-rooms are in this building. The Library and the Bishops' Memorial Hall are also here temporarily. This building, like all the others of the University is lighted by electricity and gas, and heated by steam. The corridors of the first floor are decorated with mural paintings by Gregori.

THE CHURCH

The Church of the Sacred Heart is 275 by 120 feet in ground dimension and 125 in height from the floor to the roof bridge. The interior is decorated by Gregori, and the architecture is Gothic. There is a large crypt and many chapels. In the tower is a chime of 32 bells and the great six-ton chief bell.

THE LIBRARY

The Library contains 90,000 volumes and several thousand unbound pamphlets and manuscripts. The department of literary criticism, history, political science and the Greek and Latin classics are well represented. Special libraries containing reference works on technical subjects are provided in the Colleges of Engineering and Science. The College of Law has a complete library of its own. Ample reading room is provided in the main library. The best literary magazines and reviews, as well as current numbers of scientific and technical journals are kept on file. Students have access to the Library from 8:00 A. M. to 9:00 P. M.

WASHINGTON HALL

This hall is 170 feet in length, 100 feet in width, and about 100 feet in height. It contains the rooms of the Department of Music, the club rooms for Brownson and Carroll Halls, and the University Theatre. The theatre is elaborately equipped with stage settings. It will seat 1,200 persons. Lectures by men eminent in public and professional life are given here. Concerts and plays by professional companies are also presented in this theatre. The dramatic clubs of the University present several plays annually.

SCIENCE HALL

is situated a few steps south of Washington Hall. Its dimensions are 105 by 131 feet, and it is three stories in height. A large central space, the full height of the building, is occupied by a museum containing mineral, fossil and biological specimens. The departments of Physics, Civil Engineering, Mining, Botany and Biology have recitation rooms and laboratories in this building. The equipment for each of these departments is extensive and complete. Description of the equipment will be found later in this bulletin.

THE MUSEUM

connected with the departments named above, is well arranged for convenience of study. The zoological collection on the second floor at present fills sixteen large cases and represents typical forms of all the orders and genera of vertebrate and invertebrate animals. A large collection of representative vertebrate skeletons forms a considerable part of the museum.

Facilities for the publication of research on subjects of natural history are afforded in the pages of the

American Midland Naturalist, which appears bi-monthly from the laboratory of botany at the University.

The collection in Geology and Mineralogy occupy the first floor. These collections are arranged in a series of cases on each side of the building. In one series is a carefully classified collection of minerals and ores. The opposite series of cases contain a large geological collection; some of the specimens here are of the rarest fossil remains of animal and plant life.

CHEMISTRY HALL

occupies a large three-story building directly south of Science Hall. Here are found the Chemistry and Pharmacy Laboratories. The entire first floor is devoted to advanced work in Chemistry and space is given to three large laboratories, a library and lecture room. The second floor is occupied by the Department of Pharmacy, and contains a large, well-equipped laboratory, a modern drug store, a lecture room and museum, a library for pharmaceutical publications, and a general stock-room. The general inorganic, organic, and elementary chemical laboratories are on the third floor. Each laboratory is provided with ample hood accommodations, and each desk is furnished with water, gas, and suction.

ENGINEERING HALL

This building is situated in the southern part of the grounds and is a large two-story brick structure, well lighted and heated. The lower floor contains the mechanical laboratory, machine shop, blacksmith shop and foundry. The second floor provides the shop for wood-work and also contains a well lighted drawing room where students in designing may consult complete workings of the best steam engines and pumps to be found on the market. In this building are likewise the dynamo laboratory, designing room and recitation rooms of the Electrical Engineering department.

THE OBSERVATORY

This building is located near Chemistry Hall and is designed for an equatorial telescope and for a transit or meridian circle. The equatorial telescope now in the building is intended for students of astronomy, and is in use whenever favorable weather permits.

RESIDENCE HALLS

SORIN HALL

This building is 144 feet in length, with two wings 121 feet in depth. It has a basement and three high stories, and contains 101 private rooms for advanced students; there are baths and toilets on each floor. These rooms are furnished, and students of full Senior, Junior, or Sophomore standing in any of the Colleges, are not required to pay rent. A fee of fifteen dollars, however, is charged for janitor service. On the first floor there is a chapel, a law lecture room and a law library. The building is lighted with electricity and heated with steam. In the basement are the recreation and reading rooms.

CORBY HALL

Corby Hall is another residence building. It has three stories and a basement, with baths and toilets on each floor, and is 240 feet in width. There are 125 private rooms for Sophomores and Freshmen, with recreation rooms and a chapel. The building is lighted with electricity and gas and heated with steam.

WALSH HALL

This newest dormitory building is situated south of Sorin, fronting the quadrangle. Its dimensions are 230 by 41 feet. It faces east and all the front rooms are made up of suites, each consisting of a commodious study room, flanked on either side by a bedroom. Attached to each suite is a private bath and toilet. Each room is supplied with hot and cold water. The rear rooms are singles and the general toilet and bath rooms are of hollow, fire-proof tile, walls and ceilings covered with wire lath and plaster, making practically a fire-proof building. It is equipped with a distinct system of standpipes for fighting fire. The entire corridor floors are built of reinforced concrete, covered with Roman ceramic mosaics. In finish and equipment Walsh Hall is believed to be the best college dormitory building in America. It embraces three stories besides the admirable basement and attic, and it is capable of accommodating a hundred and fifty Preparatory students.

BROWNSON HALL

Brownson Hall occupies the east wing of the Administration Building and contains the living and study rooms of Preparatory students of seventeen years of age and upwards. There is a common study hall, a common lavatory, and two large sleeping rooms in which each student has an alcove curtained to secure a personal privacy. Experience shows that the discipline of these common rooms works admirable effects on students who have not yet contracted solid habits of study.

CARROLL HALL

Carroll Hall is in the west wing of the Administration Building. It is in all respects similar to Brownson Hall, except that it is intended for younger students. The regulations are more particularly adapted to their age and scholastic attainments. Preparatory students between the ages of thirteen and seventeen years are placed in this hall.

ST. JOSEPH HALL

St. Joseph Hall is located at the extreme southwestern end of the campus and is devoted exclusively to living and study rooms. In this building live those students who defray one-half the cost of board and tuition by waiting at table during the meals. The conditions for admission to this hall are: (1) The payment of two hundred dollars ($200.00) a year on the first of August, and (2) satisfactory service as a waiter. The waiting in nowise interferes with the student's work, and all the educational advantages are open to him. It is to be regretted that through the lack of endowment the University can offer only a limited number of such opportunities each year. It is necessary to apply early for these appointments.

THE INFIRMARY

This building, 200 feet by 45 feet in ground measurement and three stories in height, contains rooms for the use of students during illness. The sick are cared for by Sisters of the Holy Cross, and the University physician visits them daily when necessary.

THE GYMNASIUM

The Gymnasium is a building 220 by 100 on the ground. The track-hall is now 100 by 180 feet on the ground. It is used for indoor meets, winter baseball practice, basketball and military drill. The gymnasium hall is 100 by 40 feet and is furnished with a full set of apparatus; below that are the offices, dressing rooms and shower baths. Friends of the University and the alumni contributed generously to the fund for rebuilding the gymnasium.

Cartier field is an enclosed field for athletic games. There is a permanent grand stand near the baseball diamond and the running track, and a portable stand near the football rectangle. The field contains ten acres of ground, and is a gift to the University from Mr. Warren A. Cartier, C. E., of the class of '87.

OTHER BUILDINGS

There are numerous other large buildings connected with the University: Holy Cross Hall, Dujarie Hall, the Community House, the Presbytery, and Saint Edward Hall, the last named being a school for children under the age of thirteen, in care of the Sisters of the Holy Cross.

SYSTEM OF INSTRUCTION

The entire plan of studies is based on the modified elective system. The student is free to select his own curriculum conformably to his natural liking, the career in life he may have in view, or the determinate intellectual bent developed during his secondary school years; but, though he is free to elect his own studies, he has not, however, unlimited freedom in this respect. The principle of general election is modified. Lest the young Freshman in his inexperience choose unwisely, he is aided in making his choice of studies by being permitted to select from among a number of parallel programs leading to baccalaureate degrees. Twenty programs are open for his choice in the Colleges, each embracing courses which, in the opinion of the Faculty, contribute best to cultural, scientific or professional knowledge. These programs are, in some cases, made elastic by the introduction of elective courses, especially in the Junior and Senior years. Students who wish to spend a limited time in study and can not complete all the courses in a program for a degree may register as special students and elect any course for which their preparation has fitted them.

The hours scheduled in the different programs are credit hours based on the average amount of time required for preparation of recitations. One hour of recitation is regarded as the equivalent of at least two hours of laboratory work. The minimum number of credit hours which a student must carry, except in his Senior year, is sixteen, the maximum number which he may ordinarily carry is twenty. Students who wish to take more work than is indicated by the maximum requirements must apply by formal petition to the Faculty for permission.

REGULATIONS GOVERNING ADMISSION TO THE COLLEGES

Candidates who wish to enter any of the Colleges must present evidence, either by examination or by a properly attested certificate, of ability to enter on the courses of the Freshman year. Sixteen units are required for entrance. The units, required and elective, are given in the table on page 22.

Examinations in all the subjects required for admission to the University are held at Notre Dame in September, the beginning of the Fall Term, and in February, the beginning of the Spring Term.

A candidate failing to pass satisfactory examinations in one or more of the subjects required for admission to any college program may, at the discretion of the Faculty, be admitted to his class as a conditioned student, to make up his deficiency by extra study *within one school year.* Only when the conditions are removed will the student be admitted to full standing in his class.

Students who have completed a four year course in High Schools or Preparatory Schools of recognized standing will be admitted without examination to the Freshman year of any program to which their preparatory studies entitle them.

Candidates for admission to advanced standing who are required to take examinations must pass, *in addition* to the usual entrance examinations, an examination in the work already done by the classes they desire to enter. The additional subjects may be found in the several programs of studies described later in this bulletin.

Applicants for advanced standing who present certificates from other colleges or universities may be received at the discretion of the Faculty with or without examination as regards particular cases.

No student will be admitted to any course of the Senior year until all conditions have been cancelled.

Catholic students are required to take the prescribed courses in Evidences of Religion.

It is recommended that Latin, modern language or history be taken as electives under the College of Letters; that modern languages, or science be taken as electives under the Colleges of Science, Engineering and Architecture; that French be the language chosen for Architecture; that language and history be taken as electives for the College of Law.

There are classes specially arranged for those who do not present credits for Trigonometry, Elementary Chemistry and Physics; the same holds true for elementary courses in Ancient and Modern Languages.

ENTRANCE REQUIREMENTS FOR VARIOUS COLLEGES IN SUBJECTS AND UNITS

COLLEGES

SUBJECTS	ARTS AND LETTERS*		SCIENCE	ENGINEERING	ARCHITECTURE	LAW
	Units	Units	Units	Units	Units	Units
English	4	4	4	4	4	4
Latin	4	2 or 4	2			2 or 4
Greek	3		or			
French, German or Spanish		2†	2	2	2	2†
History	2	2	2	2	2	2
Algebra	1	1	1 ½	1 ½	1 ½	1
Geometry	1	1	1 ½	1 ½	1 ½	1
Trigonometry				½		
Chemistry	‡	‡	1	1	1	‡
Physics			1	1	1	
Botany, Physiology, Zoology, Physiography						
Drawing						
Elective		3	3	2 ½	3	3
Total	16	16	16	16	16	16

* Including Departments of Letters, History and Economics, Journalism and Commerce.

† Four units of Language required. ‡ For admission to the College of Arts and Letters and Law one unit of Science is required. For admission to the Department of Commerce two units of Modern Language are required. Latin is not required, thus giving five electives.

DEGREES

Degrees are conferred only on regular students who have satisfied the full entrance requirements and have completed satisfactorily the courses prescribed. One hundred and twenty-eight semester hours are required as a minimum for graduation from any of the four-year programs of study. Written theses and formal examinations are demanded of all candidates for degrees. One full scholastic year of resident study is absolutely required.

BACHELORS

The courses of study offered to candidates for the degree of Bachelor extend by fixed programs throughout the four scholastic years. In the College of Arts and Letters one of five degrees is conferred on an undergraduate—Bachelor of Arts (A. B.), Bachelor of Letters (Litt. B.), Bachelor of Philosophy (Ph.B.), Bachelor of Philosphy in Journalism (Ph. B. in Jour.), Bachelor of Philosphy in Commerce (Ph. B. in Commerce)—dependent on the special program of studies the candiate selects. The College of Science offers six degrees for choice to undergraduates—Bachelor of Science (B. S.), Bachelor of Science in Biology (B. S. Biol.), Bachelor of Science in Chemistry (B. S. Chem.), Bachelor of Science in Pharmacy (B. S. in Ph.), Graduate in Pharmacy (Ph. G.), Pharmaceutical Chemist (Ph. C.), The College of Engineering offers five degrees—Civil Engineer (C. E.), Mechanical Engineer (M. E.,) Electrical Engineer (E. E.), Mining Engineer (E. M.), and Chemical Engineer (Ch. E.). Two degrees are offered by the College of Architecture—Bachelor of Science in Architecture (B. S. A.), and Bachelor of Science in Architectural Engineering (B. S. A. E.). The College of Law offers the degree of Bachelor of Laws (LL. B.).

In the College of Music one degree is offered—Bachelor of Music (B. M.). In order to obtain this degree the candidate must have studied music in the University for one complete year. He must have a thorough theoretical knowledge of four specified instruments and a practical mastery of one of them. He shall pass a written examination in harmony, counterpoint and composition, and he must submit to the examiner two original compositions: (a) a fugue for full orchestra, or for four voices with independent orchestral accompaniment: (b) a composition in the free form (sonata or rondo) for pianoforte, or a trio (pianoforte, violin and violincello.)

The degree of Bachelor will not be conferred unless the candidate shall have been in residence for one complete scholastic year in his *Senior* year of study.

MASTERS

The degree of Master is open to students who have received the degree of Bachelor from Notre Dame or from some other college in good standing, and who make application to the Faculty Committee on Graduate Study for the privilege of pursuing advanced work. All work must be approved by this Committee. One year of residence, at least, is required of candidates who have received their Bachelor's degree at another college. Those who have received their Bachelor's degree from Notre Dame, may, in some cases to be determined by the Committee, obtain the Master's degree for work done *in absentia.** One major and one or two minor courses will constitute the curriculum, forming a consistent coordinated plan of advanced work pursued with some definite aim. On completion of the required work the candidate must pass a satisfactory examination in writing, under the professors who give his subjects of instruction. The candidates for this degree must also write a dissertation of notable merit on some topic connected with his major subject, the theses to contain in the minimum five thousand words. The subject of the thesis must be announced to the Committee by December 1, and submitted for examination by May 15. Five printed or typewritten copies of the thesis must be presented to the University to be placed in the library. The fee for examination of work done *in absentia* is twenty-five dollars. The fee for this degree is fixed at fifteen dollars.

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* No degree is conferred *in honorem* except the degree of Doctor of Laws (LL. D.)

DOCTOR OF PHILOSOPHY

Three years must be spent by the candidate in University work before the degree of Doctor shall be conferred,—two of these must be spent at Notre Dame and one may be passed away from the university on approval of the Faculty Committee on Graduate Study. The candidate is required to pass satisfactorily examinations in French and German on entrance. The work for the degree shall consist of one major and two minor courses of instruction approved by the Committee. Research study shall form the most important part of the candidate's work. On completion of his work the candidate must pass minute examinations on the three subjects of his curriculum and must defend his dissertation before the Faculty. The thesis must be printed and one hundred and fifty copies presented to the University. A copy of the thesis must be handed to the Committee one month before the examinations. The degree will not be conferred for merely faithful work, nor for miscellaneous study, but for original research and for high attainment in one branch of study. The fee for this degree is fixed at twenty-five dollars.

SPECIAL STUDENTS

Students who do not wish to become candidates for a degree by following the prescribed courses of any program may register as special students and attend any of the courses of instruction for which their previous academic training has fitted them. Such special students are governed by the same regulations and discipline as the other undergraduates. They are required to pass the regular examinations in whatever courses they may pursue. In exceptional cases men of mature age, who have been out of school or college for several years, but whose training in practical affairs has been sufficiently educative, will be accepted as special students by satisfying the Faculty of their ability to pursue with profit any course of instruction.

On leaving the University special students may receive on application certificates stating their proficiency in the classes they have followed.

Students who do not take the regular four year program in Commerce, Architecture, Electrical and Mechanical Engineering, but who complete the two year programs of study will receive certificates for the work done. The conditions for receiving these Certificates are given later on in this bulletin.

SCHOLARSHIPS

The University has at present only four foundations which yield revenues for the support and tuition of five students annually. Assignment of these scholarships is made under restrictions indicated with each gift. No student will be continued in the enjoyment of a scholarship whose superiority in college work is not clearly indicated in his first year of residence. Nor will a student who has incurred serious censure by breach of the regulations of the University be considered as a candidate for a scholarship.

It is a matter of great regret that the lack of endowment makes it impossible for the University to assist a greater number of deserving students who are not able to pay the charges of board and tuition. Under conditions indicated on page 18 of this bulletin a limited number of student-waiters can be received at reduced rates. Certain clerkships in the University offices and positions in the library are also open to worthy young men. Information regarding the assignment of these places will be furnished by the Registrar. The University is doing all in its power to assist students in narrow circumstances. The friends of Notre Dame are asked to aid in this work.

THE JOHNSON SCHOLARSHIP

In 1899 Dr. Edward Johnson, of Watertown, Wisconsin, gave a fund of four thousand dollars, the income of which aids in the support of one student annually. By the terms of the gift assignment is made only to a student who intends to enter the priesthood.

THE CARROLL SCHOLARSHIP

The Reverend Thomas Carroll, of Oil City, Pennsylvania, bequeathed five thousand dollars in 1899. The terms of the bequest specify that the income shall be used to aid a student from Oil City.

THE FORD SCHOLARSHIP

In 1900 Mrs. Catherine Ford, of Chicago, gave to the University certain properties for the maintenance of worthy students. The income arising from this gift now supports fully two students annually. By the wish of the donor nominations for these scholarships are made from St. Jarlath's parish, Chicago.

THE PATRICK O'BRIEN SCHOLARSHIP

When Mr. Patrick O'Brien, a distinguished citizen of South Bend, Indiana, died in August, 1913, the family, interpreting his oft-expressed wish, established a memorial scholarship for which college men and graduates are eligible. This scholarship may be administered as two half-scholarships. There are no conditions attached to it except that the holder be of collegiate standing at least.

PRIZES

The following prizes and honors within the gift of the University are awarded annually under conditions named below. Any of these prizes may be withheld by the Faculty if the student incur serious censure for violating any of the regulations of the University.

THE QUAN MEDAL FOR CLASSICS

A gold medal is yearly given to the student who has obtained the best record in the Senior year of the Classical Program. The medal is the gift of Mr. William J. Quan, of Chicago, and is awarded only on condition that the record of the student is notably good in all the courses of instruction prescribed for the Senior year. A money prize of twenty-five dollars has recently been attached to this medal by Mr. Henry Quan, Jr., in memory of his father.

THE MASON MEDAL

A gold medal, the gift of Mr. George Mason, of Chicago, is awarded each year to the student of Carroll

Hall whose scholastic record is superior to that of his fellows. Observance of the University regulations counts in the award. The prize may be withheld if in the opinion of the Faculty the record of the student has not reached a high standard.

THE MEEHAN MEDAL FOR ENGLISH ESSAYS

A gold medal, the gift of Mrs. Eleanor Meehan, of Covington, Ky., is awarded every year to the Senior (undergraduate) who presents the best essay in English. Essays offered in competition may be on any subject approved by the head of the Department of English. The Faculty will not award the prize, if, in the opinion of the judges selected, the best essay is not notably meritorious.

THE BREEN MEDAL FOR ORATORY

This prize is the gift of the Honorable William P. Breen, of the Class of '77, and is annually awarded to the student who excels in oratory. The award is made by a committee of three selected by the Faculty and after a public competition. The winner represents the Univeristy in the Indiana State Oratorical Contest held the third Friday in every February. No student may receive the Breen Medal more than once, but the winner of this prize may compete again for the honor of representing the University in the State Contest.

There is also a ten-dollar prize offered to the winners of the Freshman, Sophomore, Junior and Preparatory contests in oratory.

THE MARTIN J. McCUE MEDAL FOR CIVIL ENGINEERING

The McCue Medal for Civil Engineering, presented by Mr. Warren A. Cartier, Civil Engineer, of the Class of '87, is awarded to the student of the Department of

Civil Engineering who has obtained the best record in all the courses prescribed in the program. The medal is awarded only when the student's record has attained a fixed standard. In computing the grades the courses in mathematics count fifty per cent. Only students who have been in residence for four full years are eligible to compete for this prize.

THE MEDALS FOR ELOCUTION

Two prizes known as the Joseph A. Lyons Medal and the Patrick T. Barry Medal are awarded every year for excellence in elocution. The award is made after competition in public. In order to be eligible to compete, students must have followed at least two of the courses of instruction in public speaking. One of the medals was founded in memory of Professor Joseph A. Lyons, of the Class of '62, who served the University as Professor of Elocution and Oratory from 1872 to 1888. The other is a gift of Mr. Patrick T. Barry of Chicago.

THE DOCKWEILER MEDAL FOR PHILOSOPHY

The Dockweiler Medal for Philosophy founded by Mr. Isidore B. Dockweiler of Los Angeles, California, in memory of his deceased father, Henry Dockweiler, is awarded to the student of the College of Arts and Letters, Senior year, who submits the best essay on some philosophical theme. The medal will not be awarded unless the essay attains a certain standard of excellence.

THE PRIZE FOR PUBLIC DEBATING

A prize of fifty dollars is awarded to three students, who, in the opinion of a committee of judges, usually from without the Faculty, excel in debating. The award is made after a competition in public. The prize is divided, twenty-five dollars going to the student who receives the highest marks, fifteen dollars, to the second and ten dollars to the third. A debating medal is awarded to each of the students who represent the University in the principal intercollegiate debates of the year.

DISCIPLINE

Official reports of each student's class standing will be sent to parents and guardians quarterly.

The Faculty maintains that an education which gives little attention to the development of the moral part of a youth's character is pernicious, and that it is impossible to bring about this development where students are granted absolute relaxation from all Faculty government while outside the class-room. A young man must learn obedience to law by the actual practice of obedience. Moreover, the quiet and concentration of mind that are needed for college work are not obtained except where discipline exists. Therefore, certain regulations, shown by experience to be salutary, are enforced at the University.

The campus includes more than a square mile of park, and students are expected to take their recreation on the campus rather than in loitering about the city. College life lasts only four years as a rule and the special charm of it lies in the points wherein it differs from the life of the city rather than in the points wherein it resembles that life. These are the years during which young men dream dreams and see visions. These are the years during which the beautiful and the abiding friendships of after life are formed and cultivated. It is almost a sacrilege to cheapen and vulgarize a college by reducing it to the level of a mere class-room experience and by stripping it of all that makes it distinctive and memorable in the experience of youth. Therefore, students of Notre Dame are expected to find their chief interest on the campus and in the companionship of college friends, rather than in the distractions of the city. Of course no attempt is made to shut out the life of the town altogether, but the question is regulated by wise rules which are made known to the student at the beginning of the year, and which the young men themselves frankly approve and loyally keep.

There are certain offenses which inevitably involve separation of the student from the University. These are: habitual disobedience to college regulations, cheating in examinations, the use of intoxicating liquors, any form of impurity, the use of profane or obscene language, and habitual laziness as regards study. In cases of suspension or expulsion tuition fees are not returned.

Tobacco is not forbidden to students of seventeen years of age and upwards, but the use of cigarettes is strictly prohibited.

Although students of all religious denominations are welcomed and are made to feel as much at home as they would be in the bosom of their own family, and although both the Faculty and the students avoid controversy or anything else that could wound the most delicate susceptibilities of our non-Catholic friends, nevertheless it ought to be frankly stated that the University is in the fullest sense a Catholic institution, and while no effort is made at proselytism, all students, as a matter of college regulation and discipline, are required to attend divine services in the University church at stated times.

Undue attention to athletics at the expense of study is not permitted, but students are encouraged to take part in manly sports, for which the large campus, the spacious gymnasium, and the general condition of student life at Notre Dame affords special advantages. All athletic associations among the students are strictly forbidden to countenance anything that savors of professionalism. The whole question of athletics is governed by a Faculty board of control which will be guided in its rulings by the regulations adopted by the leading colleges of the country. The Vice-President of the University and six members of the Faculty compose this board, and they reserve the right to a final decision on all questions concerning athletics.

In general the question of discipline at Notre Dame resolves itself into a high-minded devotion to the noblest ideals of college life. No young man of gentlemanly instincts and aspirations ever finds any of the regulations burdensome. No other kind of young man is either desired or tolerated at Notre Dame. The ideal of the University is not necessarily a large school, but rather a college home where young men who value a clean character as well as a well stored mind may associate with their own kind under the influence and direction of men of refinement and power.*

LECTURES AND CONCERTS

Each year, eminent men are invited to lecture before the students. Among those who have addressed the University in the past few years may be noted five Apostolic Delegates, Cardinals Satolli, Martinelli and Falconio, Monsignors Agius and Bonzano; Cardinals Gibbons and Farley; Archbishops Ireland, Riordan,

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* Preparatory students are enrolled in St. Edward Hall (if under 13 years of age,) in Carroll Hall (if under 17 years of age), or in Brownson or Walsh Hall (if over 17 years of age). Collegiate men live in Brownson, Walsh, St. Joseph, Corby or Sorin Hall.

Keane, Glennon, Christie, Spalding and Hanna; and Bishops Alerding, McQuaid, Maes, Muldoon, O'Gorman, Shanley, Hickey, Lillis and MacSherry. There were also such noted European churchmen as Monsignor Benson, Abbé Felix Klein, Bishop John S. Vaughan and the foremost of living English historians, Cardinal Gasquet; also men of letters like Rev. D. J. Stafford, Marion Crawford, Maurice Francis Egan, Henry Van Dyke, Seumas MacManus, William Butler Yeats, James Jeffrey Roche, Wilfrid Ward, Hamilton Wright Mabie, Frank Spearman, Joyce Kilmer, T. A. Daly, Louis Wetmore, Opie Read, Bliss Perry, Leland Powers, Henry James and the Rev. John Talbot Smith; and such men of affairs as ex-President Taft, ex-Vice-President Fairbanks, ex-Senators Beveridge, Gearin, Hill, Senator Walsh, ex-Attorney General Charles Jerome Bonaparte, Representative J. Adam Bede, the Honorable William P. Breen, Bourke Cockran, Dr. James C. Monaghan, Willis M. Moore, the Honorable Edward McDermott, His Excellency Wu Ting Fang, ex-Secretary of State, William Jennings Bryan, Vice-President Marshall, Senator B. F. Shively, Max Pam, Governors J. Harmon, J. Cox and S. M. Ralston, Hannis Taylor, Cecil Chesterton, of England, and Chief Justice Fitzpatrick, of Canada.

Concerts are given frequently by organizations from without.

During the year 1915-16 the University offered a course of public lectures and concerts in Washington Hall, in addition to the regular and special lectures required by the courses of instruction. The course was as follows:

CONCERTS

Sept. 9 Elbel's Band.
" 13 Elbel's Band.

”	16	Elbel's Band.
Oct.	18	Frank Croxton Quartet.
”	23	Cecil Fanning—Recital.
Dec.	11	Glee Club.
Jan.	19	Chicago Operatic Quartet.
”	22	Miss Susan K. Christoph—Recital.
Feb.	5	J. Parnell Egan—Recital.
”	16	Jacob Reuter-Robert Long—(Violin-Baritone).
Mar.	6	Bostonia Sextette.
Apr.	12	Chicago Male Quartet.

LECTURES

Oct.	26	W. M. Lewis—"The Purpose of the Navy League."
Nov.	6	"Quo Vadis"—Moving Pictures.
”	9	Dr. James J. Walsh—"Fabre, the Homer of Insects."
”	20	Milton McIntyre Brown—Travelogue—"Rome."
”	28	Bourke Cockran—"The Church and Peace."
”	30	William Sterling Battis—Impersonations.
Dec.	3	"The Birth of a Nation"—Moving Pictures.
”	4	Mrs. George T. Courtney—"The Madonna in Art."
Jan.	8	Prof. C. Michelon of the University of Paris—"Trench Warfare."
”	14	Joseph Scott—"Moral Courage."
”	24	Dr. Edgar J. Banks—"Origin and History of the Seven Wonders of the Ancient World."
”	25	Dr. Edgar J. Banks—"A Thousand Miles Down the Tigris."
”	26	Dr. Edgar J. Banks—"Turkey"
Feb.	9	Henry J. Hadfield—Readings.
”	25	Dr. George B. Mangold—"The Challenge of Humanity to Man."
”	29	Joyce Kilmer—"The War and the Poets."
Mar.	8	Louis H. Wetmore—"Five Leaders of English Thought."
”	11	L. O. Armstrong—"The Canadian Rockies."
April	10	L. C. Van Noppen—"The Dutch Renaissance; Vondel."
”	11	L. C. Van Noppen—"Vondel's Lucifer."
”	12	L. C. Van Noppen—"The Modern Dutch Poets; Van Eeden."
“	14	L. C. Van Noppen. "Vondel and Milton's Samson Agonistes."

April	27	T. A. Daly—The Humors and Tragedies of Life.
May	1	Dr. James J. Walsh—"The Shakespeare and Cervantes Tercentenary."
"	9–16	Rev. John Talbot Smith, five lectures on "The Modern Stage."

DRAMATICS

Nov.	9	Student Vaudeville.
Jan.	17	"Rejuvenation"—The Clare Vaughn Wales' Players.
Mar.	17	"The Marriage of Kitty"—University Dramatic Club.
June		"Twelfth Night"—University Dramatic Club.

The following photo-plays were also put on in Washington Hall:

Mar.	4	"The Man from Home."
"	11	"The County Chairman."
"	15	"The Virginian."
"	18	"The Man from Mexico."
"	22	"Chimmie Fadden."
"	25	"The Warren of Virginia."
"	29	"The Incorribigle Dukane."
April	1	"Somewhere in France."—War Pictures.
"	5	"Are you a Mason"
"	8	"It's No Laughing Matter."
"	15	"The Arab."
"	"	"Nearly a Lady."
"	29	"The Dictator."

STUDENT SOCIETIES

There are several literary and debating societies in the University which do such creditable work at their meetings and in preparation for them that their work takes on the nature of added courses of instruction. In each society a member of the Faculty acts as adviser. An Inter-Hall League has been formed and public debates are held annually. The College of Law also has an active debating club. The training in public speaking has always received special attention at the University. In thirty-three public debates with other universities and colleges Notre Dame met but three defeats—the decision of the judges in the greater number of these debates being unanimous. The University Dramatic Club and the Philopatrian Society stage at least three plays annually for presentation in public. The University Band, the University Orchestra and the University Glee Club also appear regularly in concerts.

Students of the Department of Civil and Electrical Engineering have each a society in which papers on engineering subjects are read and discussed. Men prominent in their profession are invited to lecture to these societies. The Pharmaceutical Society meets to discuss subjects of interest in the world of pharmacy. The School of Journalism has a special club for each of the four years of the course. In other departments where no such formal organizations has been effected similar results are reached by seminars.

NECESSARY EXPENSES

Matriculation fee (payable on first entrance)	$ 10.00
BOARD, TUITION, LODGING, for entire school year	400.00
Use of Gynmasium and Natatorium and admission to intercollegiate Football, baseball, basket ball and track contests throughout the year	10.00
Special Lecture, Entertainment and Concert Course	5.00
Library Fee	2.00
Deposit for Books and Stationery	10.00

The charge for Board and Tuition is divided into two payments as follows:

Payable on entrance in September	$250.00
Second payment due Januray 15	150.00

With the first payment for Board and Tuition must be included the Incidental Expenses enumerated above together with any Extra Expenses the Student may wish to incur, such as charges for Private Room or Special Courses (listed below): likewise Laboratory Fees and the cost of Military Uniform.

Spending Money or orders for clothing will not be given students unless a deposit has been made for this purpose.

No rebate will be allowed for time of absence at the opening of the Terms, September and February. The charge of $400.00 covers the Tuition Fee, which is fixed at $100.00 per Scholastic Year. The latter sum is accepted as an entirety for Tuition during the Scholastic Year, and will not be refunded in whole or part if the student be dismissed for wilful infraction of the rules and regulations; and so likewise in the event of his leaving and absenting himself from the University at any time or for any cause without proper permission. However, an exception is made if it seems to be expedient for him to go to his home because of severe or protraced illness. Degrees will not be conferred on any student whose account with the University has not been settled.

No student will be entered for the second term whose account for the first term has not been adjusted.

OPTIONAL EXPENSES—PAYABLE IN ADVANCE

For the Scholastic Year:

PRIVATE ROOMS—

Seniors, Juniors, and Sophomores Free, but a nominal charge of $15.00 is made to defray expenses connected with the care of rooms; Freshmen....$30.00 and upwards.

It must be distinctly understood that reference is here made only to Seniors, Juniors and Sophomores who bear no conditions; that is to say, who have completed all the subjects in the Preparatory and Freshman work, otherwise regular rent will be charged for rooms. Similarly, only unconditioned Freshmen are allowed the special rate quoted above. There is no reduction of rental for Walsh Hall.

Preparatory Students..............$65.00 and upwards

While students, as a rule, are advised to confine themselves to the regular courses of the programs they have entered, any of the following may be taken at the rate mentioned per

Scholastic Year, payable in advance. The charges are pro rata for any portion of the year.

Instrumental Music—Lessons on Piano and use of Instrument	$60.00
Use only of Piano for Advanced Students	$30.00
Lessons on Guitar, Flute, Cornet, Clarinet or Mandolin	30.00
Lessons on Violin	60.00
Use of each instrument*	5.00
Vocal Culture	75.00
Artistic Drawing	35.00
Telegraphy	25.00
Typewriting, Full Course	20.00
One month	5.00
Phonography	15.00
Applied Electricity	25.00
Elocution, Special Course Per Term	10.00
"Scholastic"—College Paper	1.50
Physical Culture	$5.00

Laboratory fees listed later in this bulletin.

GRADUATION FEE

Bachelor Degrees, $10.00; Master Degrees, $15.00; Doctor Degrees, $25.00; Commercial Course, $5.00.

REMARKS

Term bills and other accounts are subject to sight draft if not paid within ten days after they have been rendered.

Remittance should be made by draft, post office money order or express money order, payable to the order of the President.

Checks on local banks are not desirable, and exchange will be charged in all cases.

A limited number of student waiters can be received at reduced rates. For conditions of entrance see page 18 paragraph entitled St. Joseph Hall.

Sorin, Corby, Walsh, Brownson, St. Joseph and Carroll Halls are closed during the months of July and August. Students wishing to spend their Summer Vacation under the care of the University authorities can be accommodated at San José Park, Lawton, Michigan.

The charge for the vacation at San José Park is $100.00. Classes two hours per day are included in this arrangement. Special tutoring at professors' rates.

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* As the string and band instruments available for rent are few, students taking up these studies are advised to furnish their own instruments.

College of Arts and Letters

Department of Classics

Department of Letters

Department of History and Economics

Department of Journalism

Department of Commerce

THE COLLEGE OF ARTS AND LETTERS

From the founding of the University in 1842 to the establishment of the College of Science in 1865 only one program of prescribed courses of instruction leading to a degree was offered to undergraduate students. It embraced studies in the ancient and modern languages, in English literature, in history, the natural sciences and in mathematics. Graduate students might obtain a degree of master for advanced study one year after obtaining the Bachelor's degree. The group of courses was known as the Program of Classics, and the degrees of Bachelor of Arts and Master of Arts were conferred.

The demand of students for greater freedom of election in courses led the University in 1886 and again in 1898 to form other programs which embraced certain studies not contained in the Program of Classics, but which lead to degrees equivalent to the degree of Bachelor of Arts. In the matter of election of courses the student is permitted greater freedom in the program leading to the degree of Bachelor of Letters than in either of the other groups. The degrees now under charge of the College of Arts and Letters are the ordinary degrees of Bachelor of Arts, Bachelor of Letters, Bachelor of Philosophy, Bachelor of Philosophy in Journalism, Bachelor of Journalism in Commerce, Master of Arts and Doctor of Philosophy.

The location of the University offers special advantages for study. It is situated on a beautiful tract where cultivation has aided nature, two miles from the noisy bustle of city life. This removal from the distractions of the town gives the students opportunity to pursue their work with the quiet and concentration for earnest study. Nearly all the Faculty live on the grounds of the University, dine with the students, and are accessible to them at any time. The benefits derived from this constant association with professors cannot be overestimated.

Facilities for work are found in the libraries and laboratories. The main library has ninety thousand bound volumes well selected and several thousand pamphlets and manuscripts. The leading literary and scientific reviews are kept on file. Books may be borrowed under easy regulations. The library contains ample reading room space and is well lighted so that students may use it at night. It is open every day from 8:00 A. M. to 9:00 P. M. There are also special collections of books in the various departments of the College, mainly works of reference.

The department of experimental psychology occupies a suite of three rooms on the ground floor of Science Hall. The use of a dark room and a silent room may also be had when need requires. The equipment includes apparatus and material sufficient for repeating all the exercises in Sanford's *Manual*, and most of the exercises in Titchener's *Experimental Psychology*, Volume I. The laboratory is supplied with hot and cold water, gas and electricity. At the beginning of the course, the aim is to give students a wide acquaintance with such familiar apparatus as the chronoscope, kymograph, plethysmograph, automatograph, primeter, campimeter, tone variator, Galton whistle, Galton bar, etc. For the study of special perceptions, there is a set of stereoscopes, pseudoscopes, and accompanying slides. Provision is also made for the investigation of pressure, temperature, pain, taste, smell and muscular sensation. Experiments in the field of auditory perception are facilitated by three sets of organ pipes, a set of Koenig's movable tuning forks and resonators, and various kinds of metronomes.

For the study of physiological psychology, a complete set of models of the nervous system is at hand, together with microscopic slides of the various parts of the brain and spinal cord.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon the text-books and required readings in the preparatory courses in English; the remainder, for writing an essay.

Latin. Grammar, complete; *Cæsar*, four books of the Gallic War; *Cicero*, four orations against Cataline; *Vergil, Aeneid*, six books; translations at sight of passages from *Cicero* and *Cæsar;* translations of English into Latin based on the texts of the authors.

Greek. (*For Students in the Department of Classics only.*) Grammar, etymology and general rules of syntax; *Xenophon, Anabasis*, four Books; *Homer*, at least three books; prose composition based on text.

History. A general knowledge of the outlines of Greek and Roman History and of Medieval and Modern History, as set out in the texts used in high schools and other secondary schools. American History.

Civil Government. The Constitution of the United States; Federal Government and State Government.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and Solid, including the solution of simple original problems and numerical examples as given in the works of *Wentworth, or an equivalent in treatises by other authors.*

Physical Geography, Physiology, Botany, Zoology. Elementary.

Chemistry. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations, and laboratory work in which at least fifty experiments have been exemplified.

Physics. Elementary. The preparation in this subject should include a course of lectures illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. Laboratory work is required. In both chemistry and physics the laboratory notebook must be presented.

French and German. A two years' course in either German or French is required for entrance on the Program in Letters, the Program in History and Economics, and the Programs in Journalism and Commerce.

Students who have had no preparatory Latin and Greek, and are desirous of taking the Program of Studies in the Department of Classics, and students who have but one language and are lacking in language credits will be able to supply this deficiency in classes especially arranged for that purpose.

Subjects required for entrance to Freshman year of the Department of:

CLASSICS

English	4	Mathematics	2
Latin	4	History	2
Greek	3	Science	1

LETTERS, HISTORY AND ECONOMICS, JOURNALISM

English	4	History	2
Latin	2	Mathematics	2
French or German	2	Science	1
Elective	3		

COMMERCE

Same as for Letters with the exception of Latin. Elective 5.

THE DEPARTMENT OF JOURNALISM

Early in the year 1912, Dr. Max Pam of Chicago, established a Chair of Journalism in the University and made possible a special program of studies leading to the degree of Bachelor of Philosophy in Journalism.

In accordance with Dr. Pam's purpose in founding this chair, the program is designed to prepare young men technically for Journalism and at the same time equip them with the essentials of a liberal education. Experience has shown that graduates of this course acquire such familiarity with the practical work of newspaper making as will render their services immediately valuable; at the same time they are required to be well grounded not only in the ethics of their profession, but in general philosophy, in language study, in the principles of economics and in world politics as well as the particular currents in the national life of our country.

The entrance requirements are practically the same as for the other departments in the College of Arts and Letters, but the Director of Studies shall have power to admit as a special student any young man who is believed capable of profiting by the work of the course.

Practical experience is furnished in the course. Every graduate must have worked six weeks on the local papers and brought back a satisfactory report from the editors. Every student, earlier in the course, acts as local correspondent for a daily and a weekly paper; and all students obtain departmental experience on the university weekly, *The Notre Dame Scholastic*.

THE DEPARTMENT OF COMMERCE

The course in Commerce or Business Administration requires four years of collegiate work and leads to the degree of Bachelor of Philosophy in Commerce. The primary aim of this course is to equip the student for practical work in the business world. The work of necessity, is of a specialized nature, and yet the studies are so arranged as to afford the student all the advantages of a real college training.

A comparison of the studies listed under the course in Commerce, with the studies provided for students following work in Journalism and Economics, will show the possibility of choosing a course that does not necessarily limit the student to the special work in accounting or business methods. A substitution of classes is possible, in such a way as to provide for expert training along the lines of Banking, Advertising, Mercantile and Secretarial work. Special attention is given to the Modern Languages.

In addition to the regular studies provided in this course, frequent lectures are given by prominent business men. This has been found to be a very successful method of bringing into the class-room a practical knowledge of the commercial world.

SHORT PROGRAM IN COMMERCE

This course is designed to meet the needs of those who have neither the preparation nor the time to follow out the subjects of the regular four year program. All the practical topics are given. Only those whose maturity of mind will insure thier profiting by this work are eligible to enter on the Short Program in Commerce.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF ARTS

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Latin	5	165	I	Latin	5	165	I
Greek	5	159	I	Greek	5	159	I
English	4	154	I	English	4	154	I
History	4	160	Ia	History	4	160	Ib
Biology	4	125	I	Biology	4	125	I
Elocution	1	153	III	Elocution	1	153	IV

SOPHOMORE YEAR

Latin	5	166	II	Latin	5	166	II
Greek	5	160	II	Greek	5	160	II
Philosophy	4	183	I	Philosophy	4	183	II
English	3	155	II	English	3	155	II
Pol. Science	5	192	VI	History	5	164	VII
Elocution	1	154	VIII	Elocution	1	154	VIII

JUNIOR YEAR

Latin	4	166	III	Latin	4	166	III
Greek	4	160	III	Greek	4	160	III
Philosophy	5	184	III	Philosophy	5	184	IV, V
English	3	155	III	English	3	155	III
Elocution	1	154	VI	Elocution	1	154	VI
Elective	2			Elective	2		

SENIOR YEAR

Latin	4	166	IV	Latin	4	166	IV
Greek	4	160	IV	Greek	4	160	IV
Philosophy	5	184	VI, VII	Philosophy	5	184	VII
English	3	155	IV	English	3	155	IV
Elocution	1	154	VII	Elocution	1	154	VII
Elective	2			Elective	2		

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF LETTERS

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	154	I	English	4	154	I
Latin or)	5	165	I	Latin or	5	165	I
Elective*)	5			Elective*	5		
History	4	160	Ia	History	4	160	Ib
Biology	4	125	I	Biology	4	125	I
Elocution	1	153	III	Elocution	1	153	IV

SOPHOMORE YEAR

English	3	155	II	English	3	155	II
Philosophy	4	183	I	Philosophy	4	184	II
Latin or)	5	166	II	Latin or	5	166	II
Elective*)	4			Elective	4		
History	4	161	II	History	4	161	II
Elocution	1	154	VIII	Elocution	1	154	VIII
Elective	2			Elective	2		

JUNIOR YEAR

English	3	155	III	English	3	155	III
Latin or)	4	166	III	Latin or	4	166	III
Elective)	4			Elective	4		
Philosophy	5	184	III	Philosophy	5	184	IV, V
History	3	162	IIIa	History	3	162	IIIa
History	2	162	IIIb	History	2	162	IIIb
Elocution	1	154	IV	Elocution	1	154	VI

SENIOR YEAR

English	3	155	IV	English	3	155	IV
Latin or)	4	166	IV	Latin or	4	166	IV
Elective)	4			Elective	4		
Philosophy	5	184	VI, VII	Philosophy	5	184	VII
Elective	6			Elective	4		
Elocution	1	154	VII	Elocution	1	154	VII

*** French, German or Spanish.**

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
History	4	160	Ia	History	4	160	Ib
English	4	154	I	English	4	154	I
Language*	5			Language	5		
Pol. Science	4	191	I	Pol. Science	4	191	I
Biology	4	155	I	Biology	4	155	I
Elocution	1	123	III	Elocution	1	123	IV

SOPHOMORE YEAR

History	4	156	II	History	4	156	II
Pol. Science	4	191	II	Pol. Science	4	191	III
Philosophy	4	183	I	Philosophy	4	183	II
English	3	155	II	English	3	155	II
Language*	4			Language	4		
Elocution	1	154	VIII	Elocution	1	154	VIII

JUNIOR YEAR

English	3	155	III	English	3	155	III
Pol. Science	4	192	IV	Pol. Science	4	192	V
Philosophy	5	184	III	Philosophy	5	184	IV, V
History	3	162	IIIa	History	3	162	IIIa
History	2	162	IIIb	History	2	162	IIIb
Elocution	1	154	VI	Elocution	1	154	VI
Elective	2			Elective	2		

SENIOR YEAR

History	3	162	IVa	History	3	162	IVa
History	2	162	IVb	History	2	163	IVb
Politics	4	194	I	Politics	4	194	II
Philosophy	5	184	VI, VII	Philosophy	5	184	VII
English	3	155	IV	English	3	155	IV
Elocution	1	154	VII	Elocution	1	154	VII

* Latin, French, German or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY IN JOURNALISM

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Journalism	4	164	I	Journalism	4	164	I
English	4	154	I	English	4	154	I
Pol Science	4	191	I	Pol. Science	4	191	I
History	4	160	Ia	History	4	160	Ib
Biology	4	125	I	Biology	4	125	I

SOPHOMORE YEAR

Journalism	4	165	II	Journalism	4	165	II
English	3	155	II	English	3	150	II
Pol Science	4	191	II	Pol. Science	4	191	III
Philosophy	4	183	I	Philosophy	4	183	II
History	4	161	II	History	4	161	II
Elocution	1	154	VIII	Elocution	1	154	VIII

JUNIOR YEAR

Journalism	4	165	III	Journalism	4	165	III
English	3	155	III	English	3	155	III
Politics	4	194	I	Politics	4	194	II
Philosophy	5	184	III	Philosophy	5	184	IV, V
History	3	162	IVa	History	3	162	IVa
History	2	163	IVb	History	2	163	IVb

SENIOR YEAR

Journalism	4	165	IV	Journalism	4	165	IV
English	3	155	IV	English	3	155	IV
Business Law	5	193	IX	Politics	3	195	VI
Pol. Sci., Elec.	3			Pol. Sci., Elec.	3		
Philosophy	5	184	VI, VII	Philosophy	5	184	VII

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY IN COMMERCE

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description Pg	See For Description Course	SUBJECTS Second Term	Hrs a Wk	See For Description Pg	See For Description Course
English	4	154	I	English	4	154	I
Pol. Science	4	191	I	Pol. Science	4	191	I
History	4	161	II	History	4	161	II
Language*	5			Language	5		
Elocution	1	153	VIII	Elocution	1	153	VIII
SOPHOMORE YEAR							
English	3	155	II	English	3	155	II
Pol. Science	4	191	III	Pol. Science	4	192	IV
History	3	162	IIIa	History	3	162	IIIa
History	2	162	IIIb	History	2	162	IIIb
Language*	4			Language	4		
Business Law	5	153	IX	Insurance	3	195	XIII
JUNIOR YEAR							
Journalism	4	165	III	Journalism	4	165	III
Politics	4	194	I	Politics	4	194	II
History	3	162	IVa	History	3	162	IVa
History	2	162	IVb	History	2	163	IVb
Language*	4			Language	4		
Accounting	5	197	I	Accounting	5	197	II
SENIOR YEAR							
English	3	155	V	English		155	V
Pol. Science	2	192	VII	Pol. Science	3	192	VIII
Pol. Science	4	193	X	Pol. Science	4	193	XI
Philosophy	4	185	X	Philosophy		185	X
Lang. Read.	1			Lang. Read.	1		
Accounting	5	197	III	Accounting	5	197	IV

SHORT PROGRAM IN COMMERCE

FIRST YEAR

English	4	154	I	English	4	154	I
Accounting	5	197	I	Accounting	5	197	II
Business Law	5	193	IX	Insurance	3	195	XIII
Language*	10			Language	10		
Pol. Science	5	192	VI	Pol. Science	5	187	X
				History	4	164	VII
SECOND YEAR							
English	3	155	V	English	3	154	V
Pol. Science	2	192	VII	Pol. Science	4	192	VIII
Accounting	5	197	III	Accounting	5	197	IV
Language*	8			Language	8		
Elective	5			Elective	5		

* French, German or Spanish.

College of Science

Department of General Science

Department of Biology

Department of Chemistry

Department of Pharmacy

THE COLLEGE OF SCIENCE

The College of Science was established as a distinct department of the University in 1865. The curriculum of the student was largely elective till 1867 when there was formed the group of prescribed courses now known as the Program of General Science. Six programs are now offered to undergraduate students. The degrees under charge of the Faculty in this college are the ordinary degrees of Bachelor of Science, Bachelor of Science in Biology, Bachelor of Science in Chemistry, Bachelor of Science in Pharmacy, Graduate in Pharmacy and Pharmaceutical Chemist. The Master's degree and the Doctor's degree are conferred under the usual conditions.

THE BIOLOGICAL LABORATORIES

The department of Biology occupies the second floor of Science Hall, and consists of four large lecture rooms and laboratories well ventilated and lighted. There are also private laboratories set apart for graduate students. The lecture rooms are furnished with charts and models necessary in teaching the different courses. The arrangement of windows is such that the room can be easily darkened so that stereopticon and lantern slides on the subjects of botany, zoology and physiology may be used. The laboratories are equipped with compound and dissecting microscopes. In each room there is a library of works of reference pertaining to biological subjects. The general laboratory of microscopy, histology, and embryology is supplied with compound microscopes and the equipment indispensable in these courses. The zoological collection fills sixteen large cases and represents typical forms of all the orders and genera of vertebrate and invertebrate animals.

For work in anatomy, besides a large collection of charts, there are anatomical models of all the parts of the human body. These can be taken apart for close study. Besides there are several mounted and unmounted human skeletons. Students pursuing courses in human anatomy at the University study under a practicing surgeon and have the privilege of attending surgical clinics in St. Joseph's Hospital of South Bend.

The bacteriological laboratory is completely equipped with compound microscopes, incubators, sterilizers, and all the improved apparatus employed in thorough and careful work in bacteriology. Apart from the others is a laboratory of photo-micography which contains a perfect photo-micographic instrument for experimentation, photographing microscopic objects, making lantern slides, etc. A large and fully equipped dark room adjoins this laboratory.

THE BOTANICAL LABORATORIES

The botanical laboratory occupies the northwest end of Science Hall. It is well lighted and particularly well adapted to microscopical and histological work. The department is supplied with the usual requisites of a working laboratory such as compound microscopes and accompaniments for each student, the utensils and apparatus necessary for embedding by the paraffin, celoiden, soap methods, and mounting of preparations by the balsam, Venetian turpentine and glycerine methods. There are besides, microtomes, camera lucida, micrometers and aquaria for plant cultures so that the typical algae and fungi may be had alive for laboratory use in all stages of development throughout the year. Special devices for the regulation and modifying of artificial light are at hand enabling the student to work on dark as well as clear days.

Advanced students are supplied with Abbe condenser and oil immersion lenses. The laboratory is well stocked with histological material, and nearly all the types of common plant families of the phanerogamia and cryptogamia are preserved after proper fixing. The material for demonstration of the fresh water algae is particularly good and abundant. The supply of material in Venetian turpentine and glycerine is valuable, as it supplies permanent mounts in a few minute's work. There are also hundreds of specimens of rare and common types in paraffin. A herbarium containing over ten thousand species of flowering plants, and about five thousand cryptogam, supplies the needs of the classes in systematic botany. The collection includes plants from all parts of the United States and Canada—, the Pacific coast and the Southern States are especially well represented. Besides there is a large collection of fungi, marine algae, mosses, a large collection of several hundred species of myxomycetes from the Eastern and Central States, also nearly a thousand specimens of lichens from all parts of the United States and Europe. The latter herbarium is well stocked with local the flora, and special facilities are on hand for the study of the compositae. In the museum are found specimens of American and tropical woods and fruits. The laboratory for more advanced work accommodates about twenty-five students. It is supplied with eight working tables covered with plate glass or soapstone, and each place is supplied with lock and key. The lecture room in botany has a seating capacity of seventy-five. The total seating capacity of laboratories is about sixty.

The botanical library connected with the department and conveniently situated in the same building contains over 1200 volumes mostly the classics of the science, some scarcely to be duplicated anywhere in the country.

These original editions of the great makers of botany, some, autograph copies, range from the year 1492 to the present time; such works as those of Linnaeus, Tournefort, Caesalpino, Haller, Jussieu, DeCandolle, Ray, Morison, Parkinson, Lobelius, Dodonaeus, Ruellius, Fuchs, Tragus, Brunfels, Matthiole, Marcellus Vergilius, Hermolaus Barbarus, Camerarius, Dillenius, the Bauhins, Gregor Mendel, Persoon, Leeuwenhoeck Malpighi, Nehemiah Grew, Adanson, Ventenat, Willdenow, and many others. Most of these are the rare first editions.

There are also many magazines with back numbers all relating to botany. More than 120 current magazines and periodical at present come to the files of the department alone, all relating to botany or biology. These conveniences for botanical research leading to higher degrees are especially notable, and offer to the students of the science of systematic botany advantages rather unique.

THE EDWARD LEE GREENE HERBARIUM AND BOTANICAL LIBRARY

This Herbarium contains some hundreds of thousands of specimens, many thousands of which are types of plants first discovered and described by Dr. Greene during a half century of arduous botanical activity. It is one of the most valuable herbaria in America. The Library contains four thousand choice and rare volumes, of botanical works, including many first editions and books now out of print.

THE CHEMICAL LABORATORIES

Chemistry Hall is situated in the southeastern part of the grounds and is a large three story structure devoted entirely to chemistry and pharmacy. On the third floor are a small stock room and the two laboratories for general and industrial chemistry, one capable of accommodating one hundred and fifty students, the other seventy. The desks are all supplied with gas, water, suction and the necessary reagents. On the side tables are general stock and general apparatus, and conveniently placed are small stands for suction and blast lamps supplied with gas, air blast, acetylene. On the third floor also is the large fan for drawing gases from the hoods, with which all the laboratories are supplied. On the middle floor are the main stock rooms where supplies can be obtained by the students. Here also are the laboratories, lecture room, drug store, library and museum laboratories, lecture room, drug store, library and museum of the Department of Pharmacy. On the first floor are the laboratories for qualitative and quantitative analysis with desks to accommodate sixty-five students, and fitted with gas, suction, water and blast. Large hood accommodations are available and can be utilized to advantage because of the perfect ventilation produced by the large fans on the top floor; two small side tables equipped with air blasts, ordinary gas and acetylene. To the east of these laboratories are those for physical and electro-chemistry and special work, such as food analysis, iron and steel analysis, gas analysis, etc. The equipment in these laboratories is quite complete. Adjoinging these laboratories is a small dark room for spectroscopic and polariscopic analysis. A large lecture room to accommodate a hundred and ten students is in the south end of the first floor. It is provided with apparatus for stereopticon illustrations, storage batteries, cylinders of oxygen, carbon dioxide and a complete set of charts illustrative of the processes employed in modern chemical industries. Two laboratories adjoin, one for general organic analysis, the other for special advanced work. Two wings extend from the main building,—one contains the vacuum and pressure tanks, the acetylene and gasoline gas generators, the other the balance rooms, in which are the analytical and assay balances sensitive to the ten-thousandth of a gramme, and the library of the Department. The library contains besides the works of reference on chemistry, the principal chemical journals on file—*Berichte*, *Zentralblatt*, *the Chemical News*, the *Journal of the American Chemical Society*, the *Journal of the British Chemical Society*, the *Journal of Chemical Engineering*, the *Journal of Chemical Industries*, etc. In the large hallway are cases containing a steadily increasing collection of minerals, chemicals, designed as illustrations of the substances and processes discussed in the lectures.

The assaying and mineralogical laboratories are in a wing of Science Hall. They contain both gas and fuel furnaces for assaying gold, silver and lead ores, and also tables for blow pipe analysis. A large collection of minerals and ores serve to illustrate the processes.

THE PHYSICAL LABORATORIES

The department of Physics occupies a suite of three rooms in the south end of the first floor of Science Hall and three laboratories in the basement. The lecture room will accommodate seventy-five students. For the work in mechanics there is the force table, inclined planes, Geneva cathetometer, capable of measuring to the one twenty-five thousandth of an inch, a large physical balance, standard kilogram, a standard metre, a dividing engine made by the Geneva society, an Atwood's machine, a compound pendulum, a break circuit recording chronograph, a powerful hydraulic press with attachments, rotary air pumps and receivers, a large clock with electrical contact pieces, several self-winding clocks, mercury barometers and two aneroid barometers.

For the work in acoustics there are a Mercadier radiophone, a set of Koenig resonators, a set of electrically operated tuning forks by Koenig, a Scott-Koenig phonautograph, an Edison phonograph of earliest type, several sets of vibrating rods, tubes and bells, a large double siren, a set of very small tuning forks producing the highest audible sounds, a set of resonators mounted together with capsules of sensitive flames arranged for the analysis of complex sounds, a set of Koenig's movable tuning forks to draw compound curves on smoked glass, three sets of organ pipes, four sets of fine tuning forks, a set of apparatus for manometric observation, of sound phenomena, a large tuning fork producing the lowest audible sound, an electric metronome, a set of mounted tuning forks carrying small mirrors arranged to perform Lissajou's experiment, producing complex curves.

For the work in light there are a complete set of apparatus by Soleil, Paris, for the measurement of the wave lengths of light by various interference methods, a set of polarization spring apparatus, sets of lenses and spherical mirrors, two heliostats, four spectroscopes, a polarization saccharimeter, three projecting lanterns for gas or electric light and 3,000 slides, a set of large Nicol's prisms mounted, a large compound prism to form widely dispersed spectrum, two Rowland gratings 14,000 lines to the inch, a set of photographs of solar spectrum by Rowland, several cameras with lenses and attachments, a well-equipped dark-room for photographic work, and a photometric room and equipment.

For work in heat there are Melloni's apparatus for measuring radiation, absorption and reflection of heat complete with a set of prepared substances, standard thermometers, air thermometers, a steam engine indicator, several calorimeters, apparatus for determining the coefficient of linear expansion using the optical lever method.

For work in electricity and magnetism there are an absolute electrometer, a Holz machine and apparatus for illustrating static phenomena, four induction coils, six bridges of different types, several ammeters and volt-meter, one 2,000 lb. electro magnet, standard resistance coils, an historical set of motors showing evolution of the modern machine from the early forms of the reciprocating type, ten galvanometers of various types, a complete X-ray outfit, sets of apparatus for wireless telegraphy.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon the text-books and readings required in the regular preparatory courses in English; the remainder, for writing an essay.

Physical Geography. As given in *Tarr's* text-book or an equivalent treatise.

Physiology. *Martin's Human Body*, or an equivalent treatise.

Zoology. Botany. Elementary.

Civil Government. The American Constitution; Federal and State Governments.

History. General Outlines of Ancient, Medieval and Modern History. American History.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and Solid, including the solution of simple original problems and numerical examples, as given in the works of *Wentworth*, *Chauvenet*, *Newcomb*, or equivalent treatises by other authors.

Trigonometry. Plane and Spherical.

Chemistry. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations. A course of at least fifty experiments in elementary chemistry actually performed by the pupil.

Physics. Elementary. The preparation in this subject should include a course of lectures, illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. In both chemistry and physics the laboratory note-book must be presented.

German. A two year course in German is required. Ability to translate at sight, easy German into English and easy English into German, or

French. A two year course in French may be presented instead of German under the same conditions. Ability to translate readily, rather than an accurate grammatical knowledge, is expected.

Latin. Grammar, complete; *Cæsar*, four books of the Gallic War; translation from English into Latin based on the text of *Cæsar*.

Subjects required for entrance to Freshman year:

English	4
Science (Chemistry and Physics)	2
Mathematics	3
French, German, Latin	2
History	2
Elective	3

LABORATORY FEES

Assaying II	$ 5.00
Bacteriological Laboratory—*Bacteriology*	10.00
Biological Laboratory—*Zoology I, II, each*	5.00
Botanical Laboratory—*Botany II, IV, each*	5.00
Chemistry I, VII, each	5.00
Chemistry III, VI, VIII, IX, XIb, XIc, XIII, each	10.00
Chemistry IV, V	20.00
Mineralogy II	5.00
Pharmaceutical Laboratory II, and IV, each	20.00
Pharmaceutical Laboratory VI, and VII, each	20.00
Physics, I, III, each	5.00

PROGRAM IN GENERAL SCIENCE

The program in General Science is calculated to afford such an acquaintance with the methods and facts of modern science as will best enable the student to fit himself, either for further study of a technical or professional kind, or for the activities of business life. It is of special value to those who intend to become teachers of science. The natural and physical sciences constitute the primary studies of this program. Grouped about these are such studies in English, mathematics, history, economics, philosophy, and modern languages, as experience has shown to be necessary for the intelligent pursuit of science and the attainment of the object of the program.

Two essays on scientific topics are required of every student in the Sophomore year and two in the Junior year.

The scientific work of the Senior year is elective. Advanced courses may be chosen in physics, chemistry, biology and mathematics.

Every candidate for a degree in the Program of General Science, is required to submit, before the examination, a written thesis upon some subject connected with the elective work of the Senior year. The subject chosen must have the approval of the professor in the course selected. The thesis shall contain no less than three thousand words, and must be satisfactory in matter and treatment.

Students who complete the required courses, pass the final examination and present a satisfactory thesis will receive the degree of Bachelor of Science.

In the schedule an hour means two sixty minute periods of laboratory work or one of lecture or recitation.

PROGRAM IN CHEMISTRY

This program is intended for students who wish to obtain such a knowledge of chemistry as may fit them for professional work either in the laboratory or the class-room. Though fixed to a great extent, the schedule of work admits in the Junior and Senior year of some elective study.

Every candidate for a degree in Chemistry is required to write an essay in the Junior year on some subject connected with Chemistry and must submit, at least four weeks before the final examination, a written thesis on work covered in his Senior year. This thesis must contain at least three thousand words.

The degree of Bachelor of Science in Chemistry is given to those students who have written an approved thesis and have passed a satisfactory examination.

In the schedule, an hour means two sixty minute periods of laboratory work or one of lecture or recitation.

PROGRAM IN BIOLOGY

The program in Biology has been designed for students who wish to devote their time largely to biological pursuits, either as an immediate preparation for the study of medicine or veterinary science, or with a view to teaching or otherwise engaging in biological research. The students in this program are required to prepare an essay during the first term of the Junior year on some subject pertaining to biology. Every candidate for a degree must submit before the final examinations a written thesis accompanied with original drawings. Students not preparing themselves for the medical profession may substitute for the advanced courses in anatomy and physiology equivalents from either mathematics, physics, or English literature.

PROGRAMS IN PHARMACY

Thre are three programs in Pharmacy: one of two years, leading to the degree, *Graduate in Pharmacy* (*Ph. G.*); and one of three years leading to the degree, *Pharmaceutical Chemist* (*Ph. C.*); and one of four years leading to the degree, *Bachelor of Science in Pharmacy* (*B. S. in Ph.*).

ADMISSION

Applicants for admission to the short program must be 18 years of age, and must pass an examination in the subjects required for the completion of the first year of high school work. A certificate of work done equivalent to one year of high school will be accepted instead of an examination.

For admission to the three year program, in addition to the age limit, the completion of two year's preparatory work is required. Evidence of this work may be shown by certificate or examination.

For admission to the four year program the same conditions apply as for entrance to the Freshman year of any regular program in the College of Science.

METHODS

The subjects studied in this department are intended to impart a thorough theoretical as well as practical knowledge of Pharmacy, the work commencing with the simplest and gradually leading up to the most difficult and complicated processes.

Special attention is given to the little details, which are essential to success in any professional work and particularly so in Pharmacy. The student is carefully drilled in store etiquette, business hints, precription work, and dispensing. Neatness and order in all the operations and extreme care in the manufacture of preparations are required throughout the courses.

Attention is given to Animal extracts, Serum-Therapy, Antitoxins, new Synthetic Remedies and Alkaloidal Medication.

EQUIPMENT

Each desk is supplied with all the apparatus necessary for ordinary work. Special apparatus is furnished as required.

The department contains a fully equipped Drug Store in which the student obtains practically the same experience that he would get in actual business. A second year student is placed in full charge. He is required to furnish supplies for the department, order material, write business letters, invoice stock, etc. Then at the end of a specified time he delivers the store in good order to his successor.

About 2,000 recent prescriptions written by physicians, and taken from the files of a drug store, and the same number of prescriptions, mostly in the metric system, obtained from the San Pedros Pharmacy in Consolacion del Sur, Cuba, constitute a very important part of the equipment. Under supervision of the instructor each student is required to read them and to compound those requiring special manipulation. The reading room is supplied with all the leading pharmaceutical journals and books of reference. The pharmacognosy room contains specimens of all the official and a great many unofficial drugs for study and identification.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Zoology	5	201	I	Zoology	6	201	I
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Drawing	1	145	VIII
Drawing	1	145	VIII	English	4	154	I
Language*	5			Language	5		
English	4	154	I				

SOPHOMORE YEAR

Bacteriology	5	124	I	Physiology	5	184	I
Microscopy		176	I	Botany	5	125	I, II
Botany	5	125	I, II	Physics	5	189	V
Physics	4	189	IV	Chemistry	3	128	V
Chemistry	3	128	V	Pol. Science	5	192	VI
History	5	164	VII				

JUNIOR YEAR

Mineralogy	2	156	II	Geology	4	156	I
Astronomy	2	123	I	English	3	155	II
English	3	155	II	Elective	11		
Chemistry	7	129	VI				
Elective	4		I				

SENIOR YEAR

Philosophy	4	185	X	Philosophy	4	185	X
Electives in Science	10			Electives in Science	8		
Language	4			Language	4		
Thesis				Thesis			

* Latin, German, French or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN CHEMISTRY

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS. Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Anal. Geom.	5	167	II
Algebra	5	167	I	Language	5	. . .	
Language*	5	. . .		English	4	154	I
English	4	154	I				

SOPHOMORE YEAR

Chemistry	4	128	V	Chemistry	4	128	V
Calculus	5	167	III	Calculus	4	168	IV
Physics	4	189	IV	Physics	5	189	IV
Chemistry	7	129	VI	Chemistry	5	130	IX
Gas Analysis	2	130	VIII	Gas Analysis	2	130	VIII

JUNIOR YEAR

Chemistry	7	130	IX	Chemistry	4	129	XI
Chemistry Elective	5			Chemistry	3	130	XIII
Mineralogy	2	156	II	Assaying	3	174	II
History	5	164	VII	Geology	4	156	I
				Pol. Science	4	192	VI

SENIOR YEAR

Philosophy	4	185	X	Philosophy	4	185	X
History of Chemistry	3	131	XII	Chemistry Elective	8		
Elective	8			Scientific Readings in German and French	2		
Scientific Readings in German and French	2			Thesis	2		

* French or German

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Zoology	5	201	I	Zoology	6	201	I
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	English	4	154	I
English	4	154	I	Language	5		
Language*	5			Drawing	1	145	IX
Drawing	1	145	VIII				

SOPHOMORE YEAR

Microscopy }		176	I	Physiology	5	190	I
Bacteriology }	5	124	I	Botany	5	125	I, II
Botany	5	125	I, II	Chemistry	3	128	V
Chemistry	3	128	V	Physics	5	189	IV
Physics	5	189	IV	English	3	155	II
English	3	155	II				

JUNIOR YEAR

Botany	4	126	III, IV	Botany	6	126	III, IV
Mineralogy	2	156	II	Geology	4	156	I
Philosophy	4	185	X	Philosophy	4	185	X
Chemistry	7	129	VI	Pol. Science	5	192	VI
History	5	164	VII				

SENIOR YEAR

Anatomy)	2	119	II	Anatomy)	2	119	II
Anatomy)	4	119	III	Anatomy)	4	119	III
or Elective	6			or Elective	6		
Physiology	3	191	II	Physiology	3	191	II
Zoology	6	201	II	Zoology	6	201	II
				Thesis	1		

* Latin, French or German.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	English	4	154	I
English	4	154	I	Botany	5	125	I, II
Botany	5	125	I, II	Language	5		
Language*	5			Physiology	5	190	I
Microscopy	5	176	I				
Bacteriology		124	I				

SOPHOMORE YEAR

Pharmacy	3	180	I	Pharmacy	3	180	I
Pharmacy	5	180	II	Pharmacy	8	180	III
Chemistry	3	128	V	Chemistry	3	128	V
Physics	4	189	IV	Physics	4	189	IV
History	5	164	VII	Pol. Science	4	192	VI
Phar. Arith.	3	182	IX	Materia Med.	1	181	VIIIa

JUNIOR YEAR

Pharmacy	2	180	IV	Pharmacy	2	180	IV
Pharmacy	3	181	V	Pharmacy	6	181	VIa
Chemistry	7	129	VI	Pharmacy		182	XII
Pharmacy	1	182	XI	Chemistry	3	130	X
Pharmacog'y	3	182	X	Geology	4	156	I
Mineralogy	2	156	II	Science Elec.	3		
				Phar. Latin	2	183	XIII

SENIOR YEAR

Mat. Medica	2	181	VIIIb	Mat. Medica	2	181	VIIIb
Pharmacy	6	181	VIb	Pharmacy	5	181	VII
Science Elec.	6			Urine Anal.	1	129	VIIa
Philosophy	4	185	X	Toxicology	2	129	VIIb
				Science Elec.	3		
				Philosophy	4	185	X
				Thesis	2		

*French, German or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF GRADUATE IN PHARMACY

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Pharmacy	3	180	I	Pharmacy	3	180	I
Pharmacy	5	180	II	Chemistry	5	180	III
Chemistry	4	127	Ia	Chemistry	4	128	IVa
Chemistry	3	127	Ib	Physiology	5	190	I
Microscopy	5	176	I	Physics	5	186	I
Bacteriology		124	I	Mat. Medica	1	181	VIIa
Arithmetic	3	182	IX	Phar. Latin	2	183	XIII
Physics	5	186	I				

SECOND YEAR

Pharmacy	2	180	IV	Pharmacy	2	180	IV
Pharmacy	5	181	V	Pharmacy	5	181	VIa
Pharmacy	1	182	XI	Pharmacy		182	XII
Pharmacog'y	3	182	X	Chemistry	7	129	VI
Chemistry	4	128	IVb	Mat. Medica	2	181	VIIIb
Mat. Medica	2	181	VIIIb	Botany	5	125	I, II
Botany	5	125	I, II				

DEGREE: PHARMACEUTICAL CHEMIST

For the Degree of Pharmaceutical Chemist the subjects of the first two years are the same as the studies prescribed for the degree of Graduate in Pharmacy.

THIRD YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Pharmacy	6	181	VIb	Pharmacy	5	181	VII
Chemistry	3	130	X	Chemistry	5	132	XIV
Mineralogy	2	156	II	Urine Anal.	1	129	VIIa
Elective	3			Toxicology	2	129	VIIb
Thesis	2			Thesis	2		

College of Engineering

Department of Civil Engineering

Department of Mechanical Engineering

Department of Electrical Engineering

Department of Mining Engineering

Department of Chemical Engineering

THE COLLEGE OF ENGINEERING

In the industrial development of a country the engineer takes an important part. Many new industries are springing up, and the great activity in those already established throughout the world creates a demand for the services of trained engineers.

The programs of studies in the five departments of engineering at Notre Dame are arranged to give a knowledge of the fundamental facts and theories that are applied in engineering work. Mathematics is foremost among these requirements. The natural sciences receive their share of attention, and due importance is given to language and subjects of general educational value in arranging the programs of studies.

Laboratory work and field work give a certain amount of practice in the application of the theory to actual physical conditions. These conditions are made to correspond as closely as possible to the real work of the engineer.

A student who has no liking for mathematics should not be encouraged to take up an engineering course. The successful engineer is one who thinks clearly and executes accurately. Clear thinking is necessary to master mathematical subjects and skill and accuracy are acquired by applying the results of mathematical calculations to particular practical cases in laboratory work.

Five regular programs of studies have been arranged: One leading to the degree of Civil Engineer, one to the degree of Mechanical Engineer, one to the degree of Electrical Engineer, one to the degree of Engineer of Mines, and one to the degree of Chemical Engineer.

Special Short Courses in Electrical and Mechanical Engineering are offered to accommodate those who wish to fit themselves for practical work in the shortest possible time.

The various laboratories are equipped with the most approved forms of instruments and appliances and considerable time is given to technical work. The equipment for each department will be found described and referred to on the succeeding pages of this bulletin.

In addition to the work in the laboratories and the power plants of the University, students are taken on inspection tours to the important engineering works in the neighborhood. Several of the largest manufacturing plants in the world are in South Bend or the vicinity.

In the schedules of studies one hour credit is given for each recitation or lecture which requires from one to two hours' preparation. At least two hours' actual time in laboratory work, shopwork or drawing is required for each hour on the schedule.

EXPENSES

In addition to the regular fee for matriculation, board, tuition, lodging, as given on page 36, the regular students in the five Engineering Programs are required to pay laboratory fees to cover, in part, the cost of materials consumed and the deterioration of the apparatus used.

LABORATORY FEES

Assaying III	$15.00
Chemistry I	5.00
Chemistry III, VI, VIII, XIb, XIc, XIV, XV, each	10.00
Chemistry V	20.00
Chrystallography IV	2.00
Electrical Laboratory I, II and IV, each	15.00
Gas Engine Laboratory	10.00
Mechanical Laboratory	5.00
Metallurgy I	5.00
Mineralogy II	5.00
Mineralogy III	5.00

Petrography V	5.00
Physical Laboratory I and III, each	5.00
Physical Laboratory V	15.00
Shop, per term	15.00
Surveying III, V, VIII, each	5.00

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and Solid, including the solution of simple problems and numerical examples, as given in the works of *Wentworth*, *Chauvenet*, *Newcomb*, or an equivalent in treatises by other authors.

Trigonometry. Plane and Spherical.

Civics. The Constitution of the United States; Federal Government and State Government.

History. General outlines of Ancient, Medieval and Modern History. American History.

Chemistry. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations. A course of at least fifty experiments in elementary chemistry actually performed by the pupil.

Physics. Elementary. The preparation in this subject should include a course of lectures, illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. In both chemistry and physics the laboratory note-book must be presented.

Botany, Physiology, Physiography, and Zoology. Elementary.

Modern Language. Engineering students must present a two years' course in German, French or Spanish.

English. Part of the examination time is given for answering questions upon text-books and readings required in the preparatory courses in English; the remainder, for writing an essay.

Subjects required for entrance to Freshman year:

English	4	History	2
Mathematics	3½	French, German or Spanish	2
Science (Chemistry and Physics)	2	Elective	2½

THE DEPARTMENT OF CIVIL ENGINEERING

The courses of instruction are designed to prepare students for a thorough and systematic training in the sciences and in the principles of Civil Engineering, to perform intelligently the duties of their profession, either in the office or in some of the responsible positions superintending the construction and operation of public works. To secure these results the student is given, not only a sound theoretical training in the courses of study, but he is also required to study the practical applications of the principles upon which the theory is based. The first two years are devoted to the study of mathematics and the theoretical branches. The last two years are given to the study of applied courses—practical work in the laboratory and field, as much as possible, being required throughout the course.

Sufficient instruction is given in French and German to enable the student to read easily and intelligently professional works in these languages; the study of English is pursued until the student is qualified to prepare acceptable themes on professional subjects; philosophy, history and economics are required topics. Instruction based upon standard text-books on engineering is given throughout the course by means of lectures, recitations, practice in laboratory, drawing-room and field. This work is largely supplemented by assigning to the student, for solution, practical problems bearing directly upon the subject matter discussed in the class room and requiring original investigation, thus training the student to habits of independence and awakening his interest in the work of his profession.

The department is provided with all the instruments necessary for effective work in the different branches of field engineering. The instrumental outfit consists of surveyor's transits, engineer's transits with levels and vertical circles attached to telescopes, also solar attachments, engineers' wye levels and a plane table with all the attachments, clinometers, chains, tapes, levelling rods, etc., and an Olson's cement testing machine. After the student is taught the use and adjustment of the instruments, surveys, elementary in character, are commenced and continued progressively until the more difficult principles and methods are understood. In a similar manner is instruction given in the courses of sanitary engineering, hydromechanics, resistance of materials, bridges and roofs, etc., thus familiarizing the student with practical engineering subjects, and the most improved method of execution and designing. A large drafting room offers facilities for the proper study of all the courses in mechanical drawing and design. The room is splendidly lighted from above, well ventilated and contains the latest form of drawing tables. There are suitable arrangements for blue-printing, both by natural and electric light.

The constantly growing city of South Bend, with a population now of sixty thousand, is one of the most important manufacturing cities in the Middle West. Some of the largest plants in the world are situated here. One of the greatest water power developments in the United States is located a few miles from the University. Special advantages are thus afforded to students for the inspection of the most modern engineering works now completed or in process of construction. The City Engineer is one of the examining board.

A thesis on some subject approved by the head of the Department connected with the course of study, is required of each student as a condition of graduation. The thesis must embody the results of original research.

THE DEPARTMENT OF MECHANICAL ENGINEERING

The Program of studies in Mechanical Engineering, leading to the degree of Mechanical Engineer, is open to young men who wish to prepare themselves for the designing of machinery, with its appurtenances, and for the successful management of power plants. As the program requires a thorough knowledge of pure and applied Mathematics, as well as of Physics, only those capable of adapting themselves to these requirements should take it up. The program of the department is modeled in the twofold belief that a thorough fundamental training is best secured by a study of the practical application of the principles involved, as well as of the theoretical principles.

The work of the department, conducted in connection with other departments elsewhere described, consists of the study, by text-book or lectures, of the materials used in mechanical engineering, accompanied by the science of pure mechanical kinematics, whicht races the motions of connected parts, without reference to the cause of such motions to the work done or energy transmitted. This is succeeded by machine design, which is a direct development of kinematics, and the course continues throughout the Junior and Senior years.

The courses in Shopwork are most complete. The first year's work is confined to practice in the woodshop, in which the principles of carpentry, turning, and pattern-making are taught. When the students have become sufficiently skilled in woodwork, they take up the work of the foundry, blacksmith shop, and machine shop. A systematic course of training is provided, which advances the student by easy steps until he has mastered all the details of the work.

The latter part of the Senior year is largely taken up in the preparation of a graduation thesis. Here especially the student is taught to depend as much as possible upon his own resources and abilities in exercising his ingenuity. This is the culminating effort of the program embodying its chief results, and is expected to show considerable originality.

Every possible advantage is given the student wishing to specialize in some of the branches of engineering, toward furthering his knowledge and ability in the particular field desired. He may take up general machine design, steam engine design, specifications and contracts, installation and erecting, original research or gas engine design and operation. A systematic curriculum of study will be outlined in each individual case leading to a complete and proficient knowledge of the work undertaken.

Access may be had to all machinery and apparatus of the University contained in the various power plants and laboratories elsewhere described, and every effort is made by the authorities to make the work as comprehensive as possible.

The laboratories and shops are equipped with all necessary apparatus and machinery. The wood shop is supplied with modern work benches fully equipped with the smaller tools necessary for carpentry, lathes for turned work, jig saws, a pony planer, a joiner, an edge moulder and shaper, a universal trimmer, circular saw with dado and drilling attachments and band saw, the whole forming an adequate equipment for a thorough mastery of joinery, scroll work and pattern-making.

For operating the machine shop there are two ten-horse power motors from which power is transmitted to the various machines by line shafting running the entire length of the building. The latest improved lathes have been provided, nine in number, varying from a five-inch swing in the smallest to a large engine lathe with sixteen foot bed, having a capacity for work twenty-eight inches in diameter. Two drill presses, a large planer, a shaping machine and a Brown and Sharpe milling machine complete the outfit, thus making the machine shop a model of its kind. There have been completed lately in the machine shop seven new screw cutting lathes of fourteen-inch swing, a high speed bench hand lathe, one twenty-eight inch Sibley and Ware drill press, one horizontal 8x12 slide valve steam engine and a wood milling machine. The equipment is added to regularly, and recently a Seneca Falls lathe of fourteen inch swing and eight foot bed, a Crown high speed lathe, a Toledo punch press and a complete new set of chucks, drills, taps, mandrels and lathe dogs have been installed to meet the additional requirements of the courses. It is the policy of this department to refrain as much as possible from exercise work, and each student is usually taking part in the construction of some new machine or engaged on general repair work for the University, a plan which is regarded superior to a fixed routine of exercises.

The blacksmith shop has the usual complement for teaching forging, annealing, welding and tool-making. In the foundry work the student is instructed in the proper disposition of gates and sprues, the mixing of sand, setting up and drawing simple and complicated patterns and core making. This is supplemented with lectures on the proper mixing and heating of cast iron for the various purposes for which it is used.

In addition to the facilities afforded by the shops, the engineering students have access to the steam and power plants of the University which have been recently remodeled and made to compare favorably with the best contemporary practice. The main steam plant contains two batteries of ten horizontal tubular boilers, aggregating 1200 horse power. In connection with the boilers is installed the necessary testing apparatus as follows: a Worthington hot water meter for measuring the amount of feed water, a feed water themometer for getting temperature of same, a high range thermometer for temperature of generated steam, a throttling calorimeter for ascertaining the quality of steam and an automatic recording pressure gauge giving a continuous record of the boiler pressure. Provision is made for finding the temperature and pressure of the flue gases by means of a pyrometer and draught gauge and for obtaining samples of flue gas for analysis with Fisher's analysis apparatus. These, with a Carpenter coal calorimeter for determining the heating value of fuel, comprise a full and complete equipment for giving the student an intimate knowledge of the practical part of boiler mangement and testing. A Webster feed water and purifier, two compound duplex pumps, two vacuum pumps working on the heating system, two large Worthington fire pumps 16x9x12 with a capacity of 1500 gallons per minute, with numerous separators, steam traps, automatic reducing valves, etc., complete the apparatus in the main steam plant. A McEwen high speed automatic engine, an Armington and Sims engine of smaller type and several low speed horizontal engines with polar and roller planimeters, indicators, reducing wheels, slide rules and other necessary instruments, are used in studying the operation of the steam engine, distribution and economy of steam, regulation valve setting and heat wastes.

There have been recently donated to the mechanical laboratory about four hundred brass and iron fittings used in steam and gas engineering, including feed water injectors, sight feed lubricators, oil cups, safety valves, relief valves, different varieties of globe valves, gate valves, tees, elbows, crosses, unions, bushings, and reducers. Many of these have been sectioned to show the dimensions, and facilitate a study of the internal structure and arrangement of parts.

In the gas engine laboratory are installed one horizontal eleven horse power four-cycle engine completely equipped for experimental runs, with indicator reducing motion, prony brake, scales and thermometers, a five horse power two-cycle vertical gas engine of the marine type, a four horse-power horizontal four-cycle gasoline engine with circulating pump and cooling tower, one Motsinger auto-sparker with induction coil, one Apple ignition dynamo with storage battery, two Hendricks automatic igniters together with carburetors, spark plugs, spark coils, indicators, and all necessary equipment for a complete study of the gas engine.

Recent additions include the latest type Kingston carburetor and muffler, a National storage battery, Pittsfield induction coils and ash coils, two Wizrad magnetos with brass armored spark coils, one four engine cylinder distributor and a number of improved standard and meter spark plugs.

A set of castings for an eight horse power engine to be operated by alcohol has been placed in the machine shop, and the work of designing and building the engine will be undertaken by the students.

In the department library, standard authors may be consulted and the current literature on engineering topics is kept on file for reference, as well as a complete line of trade catalogues.

SHORT PROGRAM IN MECHANICAL ENGINEERING

Theory, Design and Operation of Gas, Oil and Vapor Engines.

This program is devoted exclusively to the study of explosive motors, in theory, design, construction and operation.

The rapid progress made in recent years in the design of gas engines, together with their adaptation to the supplying of power for almost every requirement, has led to establishment of this program for young men wishing to make a special study of this branch of engineering.

The essential work of the first year consists of a general descriptive study of the different types of engines with discussions on the general mangement operations, care and special uses to which this type of motor may be applied. During the second year the general theory of the gas engine is studied and the design of an engine for specific purposes is undertaken by each student.

The laboratory work will consist in part of indicator practice, determination of mechanical and thermodynamic efficiency, speed regulation, and economy. To these are added studies in various kinds of ignition, operation of vaporizers and carburetors and practical management of internal combustion engines. A considerable part of the work will consist of the complete adjustment and successful operation on the test-block, under varying loads of the engine built by the student. Experiments in flame, electric and hot tube ignition, operation of vaporizers and carburetors, construction of spark coils and care of motors will complete the work.

The courses in shopwork are intended to give practical application to the theories advanced in the class room by the complete building and testing of a gas engine of a design to be selected by the demonstrator. Each student is required to prepare the patterns and core boxes, machine the castings and forgings, assemble the complete engine and submit a comprehensive report of a test on the machine constructed. If the report proves satisfactory a certificate of proficiency is given to the student and the gas engine becomes his own property.

For admission to this program the student should have completed courses XIVa and XIVb in shopwork and must certify by examination or certificate evidence of a knowledge of algebra as far as logarithms, plane geometry, and his further ability to pursue the studies of the first year. In case a student has not had this preparatory work, he may, with special effort complete it in addition to the regular work of the course. Candidates shall also write a short essay, which must be satisfactory in spelling, sentence and paragraph construction.

THE DEPARTMENT OF ELECTRICAL ENGINEERING

The remarkable development of electrical industries during the past few years has created a demand for men skilled in the theory and practice of electrical and mechanical work. The study of the subjects arranged in the program of Electrical Engineering is intended to give a general education as well as a special training in the technical branches involved in the various practical applications of electricity in industrial operations.

General theory is given in lectures and by recitations from standard text-books. In the laboratories and shops the operations explained in the class-rooms are performed by the student, in doing which he aquires skill in handling tools and instruments, and obtains a working knowledge of the principles involved. Careful records of the work done in laboratories are kept by the student and are handed in for suggestions and corrections at the end of every week.

The University is located near a great manufacturing center in the growth of which electricity is taking a very prominent part. Electric power generated by steam is now being distributed and utilized in several large plants, some using the three phase alternating system, while others are using the direct current. Several of the largest water power developments in the Middle West are situated within a few miles of the University. From this system we receive three phase alternating currents which furnish light for our buildings and grounds, and power for driving motors in our shops and printing office, etc., all of which are operated by electricity.

There are numerous other transmission lines and electrical power plants operated by water power within a short distance. Our students visit these plants accompanied by an instructor who points out the applications of the text-book theory in the design of electrical apparatus and its operation under actual working conditions.

Each candidate for graduation must present at the end of the Senior year an acceptable thesis embodying the results of an extended original research on an engineering subject, chosen at the beginning of the year, with the approval of the head of the department. The descriptive part must be typewritten, and bound in book form together with the drawings.

The equipment for the laboratory work in electrical engineering includes dynamos typical of the various classes, accessory apparatus and measuring instruments as follows: A three phase A. C. induction motor arranged to operate on single phase circuits with a condenser compensator, a high frequency 1000 V. 33 K. W. composite wound Wood alternator of the latest type with exicatter and a full set of switchboard instruments, several transformers, of different capacity, a high tension transformer for testing insulation, an Edison bipolar 10 K. W. 125 V. generator, a Thompson-Houston arc light machine with regulator and fifteen lamps, a Wood arc machine, capacity 25 lights, an Edison bipolar, 3 K. W. 125 V. dynamo with special winding, a Van Depoele compound wound dynamo, a special A. C. 5 H. P. dynamo or rotary converter, a series wound dynamo with wrought iron field, number of small motors, a 10 H. P. induction motor, three phase, 220 volts 60 cycles, a motor generator set consisting of an adjustable speed 8 H. P., D. C. motor, direct connected to a special multiphase, revolving field A. C. dynamo.

A three K. W. three phase rotary converter, an eight K. W. rotary converter, a set of inclined coil alternating current portable instruments, voltmeter, ammeter and wattmeter, telegraph relays, sounders, switchboard, etc., telephone apparatus including subscribers set of various modern types, a fifty drop manual swichboard complete and a lot of separate drops, jacks, switches, lightning arresters, etc., automatic telephone switchboard containing first and second selector and connector switches, interrupter heat coils, etc., and three subscribers sets—with this apparatus all the operations involved in the operation of a 10,000 system may be performed, a complete central energy switchboard, several lines and subscribers sets and a selective signaling four party line outfit, a collection of historical sets including Reis' transmitter and receiver, a standard portable bridge, a common portable bridge, a testing battery, a power or foot lathe with wood turning tools, drills and hand tools for metals, a set of tools for metal working, a calibrating lamp rack, a D'Arsonval and common galvanometers, Ballistic galvanometer, standard condenser, etc., for capacity work, resistance boxes, standard meghoms, etc., high resistance Thompson galvanometer, standard cells, voltmeter arranged for the comparison of incandescent lamps, a plug switchboard controlling all circuits, a plating dynamo and a buffer for cleaning and polishing work to be plated, solution tank, etc.,—in all, a compltee outfit for electrotype work, a hot wire ammeter, twelve ammeters and voltmeters mostly of the Weston type for direct current measurements, a Kohlrausch bridge for measuring battery resistance, etc., a lot of arc lamps series and constant potential, open and enclosed arcs. Wattmeters of various types, a collection of motor starting rheostats, several sets of parts of incandescent lamps showing the various stages in their manufacture, a large collection of porcelain insulators used in electrical work including a lot of insulators for high tension transmission lines, a lot of armature core disks, transformer core stampings, dynamo frames, formed coils, brush holders, pole pieces, samples of insulation, commutator segments, etc., used in dynamos of good design, donated by leading manufacturers of electrical machinery, a case of marked samples of wire insulators, lamps and other constructive materials, a library of practical books of reference and files of leading periodicals and trade publications, a Cooper Hewitt mercury vapor lamp, a high frequency Telsa coil and condenser, a working model of the induction motor, an armature winding model mounted to rotate in bipolar and multipolar fields, a storage battery 25 cells with universal switch to connect for various voltages.

For the work of electricity and magnetism in the courses in physics there are the following: An absolute electrometer, a Holtz machine and apparatus for illustrating static phenomena, four induction coils, six bridges, of different types, several ammeters and voltmeters, one 2,000 lb. electro magnet, standard resistance coils, a historical set of motors showing evolution of the modern machine from the early form of the reciprocating type, ten galvanometers of various types, a complete X-ray outfit, a set of apparatus for wireless telegraphy. Other available apparatus has been previously indicated.

For the work in chemistry, drawing and shopwork, the equipment and facilities will be found described elsewhere in the bulletin.

SHORT PROGRAM IN APPLIED ELECTRICITY

Students who do not wish to take the languages and higher mathematics required in the regular four-year program should take up the Short Program, which may be completed in two years. The studies are arranged to give an accurate knowledge of the fundamental theories of electricity and magnetism, as well as a certain amount of skill in handling electrical machinery and appliances. Algebra, geometry, trigonometry, and elementary physics, are included, for they are necessary in order to carry on successfully the practical work of designing, manufacturing and testing or operating electrical apparatus. Training in this practical work is given in the drafting room, the machine shops, and in the electrical and physical laboratories.

The actual conditions of the commercial application of electricity to the distribution of light and power are learned by testing, repairing and making additions to the University plant, and by visiting the numerous electrical establishments in the vicinity, accompanied by an instructor.

The study of the principles of mechanical drawing is taken up early in the program and sufficient practice is given to enable the student to make working drawings and to follow them in the construction of apparatus in the shops and laboratories.

Applicants for admission to the Short program should be at least 17 years of age. They should have a fair knowledge of the subjects taught in the common schools, especially arithmetic, and algebra as far as logarithms, and plane geometry. They shall also write a short essay which must be satisfactory in spelling, punctuation, sentence and paragraph construction.

When the required studies have been satisfactorily completed, a certificate of proficiency is issued.

The laboratory fees for students who are taking the regular work in the program, will be as given on page 74.

THE DEPARTMENT OF MINING ENGINEERING

The wonderful growth and expansion of the mining industry, not only in this country but in Mexico, Central and South America, has created a constant demand for trained men who have a thoroughly practical as well as theoretical knowledge of mining operations.

The aim of this department is to give the student sufficient training in the various technical branches of mining to enable him to project and successfully carry through a mining enterprise.

The course of studies for the degree of Mining Engineer includes the essential subjects of Mechanical Engineering, particularly those which have special prominence in mining work; for the economical operation of any mine depends to a great extent upon the judicious selection and proper operation of the machinery in the power plant, mill and smelter. Likewise the subjects of Civil Engineering with but few exceptions, are embraced in the mining course, for the reason that many of the problems of Civil Engineering must be solved in the laying out and directing of mining work. Plans and surveys of the surface improvements and underground workings of a mine are made by the Mining Engineer.

In addition to these subjects the course includes the following special branches: Crystallography, Mineralogy, Petrography, Physical and Chemical Geology, Economic Mining Geology, Metallurgy, Ore Dressing, Assaying and a thorough study of Inorganic Chemistry in its application to mining and metallurgy.

Throughout the course the object is not only to present clearly the theory underlying each subject, but to fix it in the mind of the student by practical work in the laboratory, shop, drafting room and in trips to the mining districts where the student becomes familiar with the practical application of the principles laid down in the text-book and lectures.

The subject of the thesis required in this course must be along the line of mining or metallurgy and consist of original research work in one of its special branches, to be approved by the head of the department.

THE DEPARTMENT OF CHEMICAL ENGINEERING

Chemical manufacture has developed so rapidly and grown so exacting that there has arisen a demand for men who not only can create and improve chemical processes strictly so-called, but who can deal with the problems of construction and maintenance as far as they are related to the chemical industries. This often demands a broad knowledge of the effect of chemical forces on materials of construction such as the ordinary engineer does not usually possess and which can come only from a detailed study of chemical laws and chemical action applied not only to laboratory methods but also to technical processes. To prepare young men for such work the course in Chemical Engineering has been designed.

The student taking up this course is given a thorough training in chemical principles similar to that outlined in the Course in Chemistry, except that the laboratory period is somewhat shortened. To this training is added a certain amount of the theory and laboratory practice in Mechanical Engineering sufficient for the needs of chemical industries, together with a consideration of electrical currents as used in chemical manufacture.

A carefully prepared thesis on a topic approved by the dean of the department is a requisite for graduation.

STUDIES PRESCRIBED FOR THE DEGREE OF CIVIL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
English	4	154	I	English	4	154	I
Language*	5	. . .	I	Language*	5	. . .	I
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Drawing	3	143	I
Drawing	3	143	I	Surveying	2	134	II, III

SOPHOMORE YEAR

Calculus	5	167	III	Calculus	5	168	IV, V
Des. Geom.	3	134	I	Des. Geom.	3	133	I
Surveying	5	134	IV, V	R. R. Survey'g	5	135	vii, viii
Geodesy		134	VI	Physics	5	187	II
Physics	5	187	II	Physics	3	188	III
Drawing	1	144	V	Drawing	1	144	V

JUNIOR YEAR

Analytic Mechanics	5	136	VIII	An. Mechanics	2	136	VIII
Mineralogy	2	156	II	Mechanics of Materials	3	136	X
Drawing	2	144	VI	Geology	4	156	I
Astronomy	2	123	I	Drawing	2	145	VII
Philosophy	4	185	X	Philosophy	4	185	X
History	5	164	VII	Pol. Science	5	192	VI

SENIOR YEAR

Engineering	5	136	XII	Engineering	5	137	XII
Hydromechan	3	139	XVI	Hydromechan	3	139	XVI
Bridges, Roofs	5	137	XIV	Graph. Stat.	5	139	XV
Sanitary Engineering	2	137	XIII	Sanitary Eng.	2	138	XIII
				Roads, Pav'mt	2	137	XI
				Thesis			

*French, German or Spanish

STUDIES PRESCRIBED FOR THE DEGREE OF MECHANICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
Language*	5	. . .	I	Language*	5	. . .	I
Drawing	3	143	I	Drawing	3	143	I
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Shopwork	3	173	XIVb
English	4	154	I	English	4	154	I

SOPHOMORE YEAR

Calculus	5	167	III	Calculus	5	168	IV, V
Drawing	2	144	II	Drawing	2	144	II
Physics	5	187	II	Physics	5	187	II
Shopwork	3	173	XIVc	Physics	3	188	III
History	5	164	VII	Shopwork	3	173	XIVd
				Pol. Science	5	192	VI

JUNIOR YEAR

An. Mechanics	5	136	VIII	Hydromechan	2	139	XVI
Kinematics	3	170	V	Mech's of Mat	3	136	X
Calorimetry	2	189	Vb	Mach. Design	2	170	VI
Shopwork	3	173	XIVe	Valve Gears	2	171	VIb
Philosophy	4	185	X	Elec. Measure	1	189	Va
				Shopwork	3	173	XIVf
				Philosophy	4	185	X

SENIOR YEAR

Materials of Engineering	2	169	II	Steam Power Plants	5	169	III
Thermodynam	4	169	I	Steam Boilers	3	170	IV
Steam Power Plants	5	169	III	Thermodynam	4	169	I
Mechan. Lab.	3	171	VIII	Surveying	2	133	II, III
Shopwork	3	173	XIVf	Thesis			

*French, German or Spanish

STUDIES PRESCRIBED FOR THE DEGREE OF ELECTRICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
Language*	5	...		Language*	5	...	
Chemistry	4	127	II	Chemistry	4	128	III
Chemistry	2	128	III	Drawing	3	143	I
Drawing	3	143	I	English	4	154	I
English	4	154	I	Shopwork	3	173	XIVb

SOPHOMORE YEAR

Calculus	4	167	III	Calculus	5	168	II, V
Physics	5	187	II	Physics	5	187	II
Descrip.Geom.	2	144	III	Descrip.Geom.	2	144	III
Surveying	5	134	IV, V	Physics	3	188	III
History	5	164	VII	Pol. Science	5	192	VI
Shopwork	3	173	XIVc	Shopwork	3	173	XIVd

JUNIOR YEAR

Dyn'mo Elec.				D. C. Engine	3	148	V
Machines	4	147	IV	Anal. Mech.	2	136	VIII
Anal. Mech.	5	136	VIII	Thermodyn'm.	4	169	I
Thermodyn'm.	4	169	I	Physics	2	189	Va
Physics	2	189	Vb	Philophy	4	185	X
Philosophy	4	185	X	Shopwork	2	173	XIVf
Shopwork	3	173	XIVe	Kinematics	3	170	V
Elec.Eng.Club	1	151	XVIII	Elec.Eng.Club	3	151	XVIII

SENIOR YEAR

Alternating				A. C. Mach.	3	149	VII
Currents	5	148	VI	Probs. of Eng.	2	149	VIII
Problems of				Hydr. Pow. Pl.	3	150	XII
Engineering	2	149	VIII	Designing	2	149	IX
Hydraul. Eng.	3	150	XI	Elec. Lab.	3	149	X
Designing	2	149	IX	Business Law	2		
Electrical Lab.	3	149	X	Mechanics of			
Elective	2			Materials	3	136	X
Elec. Eng. Club	1	151	XVIII	Elec. Eng. Club	1	151	XVIII
				Thesis		152	

*French, German or Spanish

Summer Thesis between Junior and Senior years. See Page 152

STUDIES PRESCRIBED FOR THE DEGREE OF MINING ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Drawing	3	143	I
Drawing	3	143	I	Shopwork	3	173	XIVb
English	4	154	I	English	4	154	I
Mining Engineering	3	175	I	Mining Eng.	3	175	I
				Surveying	2	133	II, III

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Calculus	5	167	III	Calculus	5	168	IV, V
Surveying	5	134	IV, V	R.R.Surveying	5	135	vii, viii
Geodesy		134	VI	Physics	5	187	II
Physics	5	187	II	Physics	3	188	III
Chemistry	3	128	V	Chemistry	3	128	V
Drawing	1	144	V	Drawing	1	144	V
History	5	164	VII	Pol. Science	5	192	VI

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Anal. Mech.	5	136	IX	Mech. of Mats	3	136	XI
Mineralogy	2	156	II	Hydromech'n.	2	139	XV
Drawing	2	144	II	Mineralogy	3	156	III
Mineralogy	3	156	III	Drawing	2	144	II
Crystall'phy	5	156	IV	Geology	4	156	I
Philosophy	4	185	X	Mine Survey'g	2	176	II
				Philosophy	4	185	X

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Ore Dressing	3	175	IV	Assaying	5	174	III
Metallurgy	3	174	I	Economic Mining Geol	2	158	VII
Phys. & Chem. Geology	3	157	VI	Graph. Statics	5	139	XV
Petrography	2	157	V	Petrography	2	157	V
Gas Engines	5	172	X	Eng. & Boilers	3	172	IX
Mat. of Engin'g	2	169	II	Thesis			
Shopwork	3	173	XIVc				

SUMMER WORK

(To be done the summer preceding the Senior Year)

This course consists of actual Mining Engineering practice in the mines, under the direction of the head of the department. Each student is required to make a complete, accurate underground survey with a mining transit, connecting the mine traverse with one on surface, through vertical and inclined shafts. A study of the different methods of mining in several mines are made with special attention given to Geology in its relation to economic mining; ore dressing mills and metallurgical plants are carefully inspected to familiarize the student with the best concentrating and smelting methods. Sixty hours a week for four weeks.

During the summer of 1913 the course was conducted in Northern Ontario mining districts as follows:—at the Cobalt silver mines, Kirkland and Porcupine gold mines, Sudbury nickel and copper mines, and the Sellwood iron mines, where the class had full access to the varied mining methods, smelters and cyanide mills.

STUDIES PRESCRIBED FOR THE DEGREE OF CHEMICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
Chemistry	4	127	II	Chemistry	2	128	III
Chemistry	2	128	III	Drawing	3	143	I
Drawing	3	143	I	Language*	5		I
Language*	5		I	English	4	154	I
English	4	154	I	Shopwork	3	173	XIVb

SOPHOMORE YEAR

Calculus	5	167	III	Calculus	4	168	IV
Physics	5	187	II	Physics	5	187	II
Drawing	2	144	III	Physics	3	188	III
Chemistry	3	128	V	Drawing	2	144	III
Shopwork	3	173	XIVc	Chemistry	3	128	V
History	5	164	VII	Shopwork	3	173	XIVd
				Pol. Science	5	192	VI

JUNIOR YEAR

Chemistry	7	129	VI	Chemistry	5	132	XV
Anal. Mech.	5	136	VIII	Mech. of Mats	3	136	X
Kinematics	3	170	VII	Hydromech'n.	2	139	XVI
Drawing	2	144	II	Chemistry	2	130	VIII
Philosophy	4	185	X	Steam Boilers	3	170	IV
Calorimetry	2	189	Vb	Philosophy	4	185	X
				Drawing	2	128	II
				Elec. Measur't	2	189	Va

SENIOR YEAR

Chemistry	5	130	IX	Chemistry	5	130	IX
Chemistry	3	131	XIII	Chemistry	4	131	XI
Chemistry	3	132	XIV	Chemistry	3	132	XIV
Thermodynamics	4	169	I	Thermodynamics	4	169	I
Mech'l. Lab.	2	191	VIII	Thesis			

*French, German or Spanish.

STUDIES PRESCRIBED FOR SHORT PROGRAM IN MECHANICAL ENGINEERING

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Geometry	5	213	E	Trigonometry	5	213	F
Drawing	3	143	I	Drawing	3	143	I
Shopwork	3	173	XIVc	Shopwork	3	173	XIVd
Chemistry	5	127	I	Chemistry	5	127	I
Physics	5	186	I	Physics	5	186	I
Gas Engines	5	172	X	Vapor Engine	5	172	X

SECOND YEAR

Gas Engine Design	15	172	XI	Gas Engine Design	10	172	XI
Gas Power Plants	3	171	VII	Gas Engine Laboratory	3	173	XIII
Gas Engine Construction	3	173	XII	Gas Engine Construction	3	173	XII
Gas Engine Laboratory	3	173	XIII	Engines and Boilers	3	172	IX

STUDIES PRESCRIBED FOR SHORT PROGRAM IN APPLIED ELECTRICITY

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Geometry	5	212	D	Geometry	5	212	D
Drawing	3	143	I	Drawing	3	143	I
Shopwork	3	173	XIVa	Shopwork	3	173	XIVb
Physics	5	186	I	Physics	5	186	I
Applied Electricity	5	146	I	Applied Electricity	5	146	I

SECOND YEAR

Gas Pwr. Pl'ts	3	173	VII	Trigonometry	5	213	F
Designing	3	149	IX	Engines and Boilers	3	172	IX
Shopwork	3	173	XIVc	Designing	3	149	V
Dynamo Machinery	5	147	III	Shopwork	3	173	XIVd
Applied Electricity	5	147	II	Dyn. Mach.	5	147	III
				Applied Elec.	5	147	II

THE COLLEGE OF ARCHITECTURE

The courses in Architecture have been planned to provide the student with the elements of a liberal training combined with the artistic and scientific studies necessary to equip him for the practice of his profession.

The curriculum required for the degree of B. S. in Architecture is arranged for the average student to complete in four years, although in some cases it may require a longer period, as a good standing in design must be attained before the degree is given.

The work required for the student wishing to specialize in construction which leads to the degree of B. S. in Architectural Engineering is the same for the first two years with increased attention to mathematics, and during the last two years a more extended study of constructive problems.

A master's degree will be conferred upon students completing graduate study in residence if such students have received their degree from Notre Dame or from another school of Architecture of equal standing; upon her own graduates who spend a year in residence at another school or in travel, following an approved program of study and investigation; or at the end of not less than two years if that time is spent in practice and in accordance with university requirements.

A program is arranged covering two years for students who have had some office experience and are equipped to profit by the work.

EQUIPMENT

The College of Architecture possesses a collection of books, a classified collection of plates and photographs, a file of the best architectural periods, signed architectural drawings from the Ecole des Beaux Arts and from American architects, working drawings and specifications, architectural models and casts.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon the text-books and required readings in the preparatory courses in English; the remainder, for writing an essay.

Algebra. Fundamental operations, simple equations, involution and evolution, radicals, radical equations and quadratic equations, including everything up to logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises by other authors.

Geometry. Plane and Solid.

Trigonometry. Plane and Spherical.

History. A general knowledge of the outline of Ancient, Mediæval and Modern History.

Civics. Elementary.

Physiology.

Physiography.

Botany. Zoology. Elementary.

Chemistry. Elements of inorganic chemistry, as given in high schools of good standing. Laboratory work is required.

Physics. Elementary. The preparation in this subject should include a course of lectures illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. Laboratory work is required.

French. A two years' course in French is required. Ability to translate French into English, and easy English sentences into French. Or,

German. A two years' course in German is required. Ability to translate German into English, and easy English sentences into German.

Drawing. A knowledge of the use of drawing instruments, of projection drawing and elementary freehand.

Subjects required for Freshman standing:

English	4	History	2
Mathematics	3	French or German	2
Science	2	Elective	3
(Chemistry and Physics)			

THE PROGRAM IN DESIGN

It has been the aim of the College in offering this program so to arrange it that the student pursuing it will have upon completion a liberal education, a practical working knowledge of Construction, and a systematic and thorough training in Architectural Design and Composition.

The course is built up around the work in the drafting-room where half of the student's time is spent. The work in Design, beginning in the Freshman year with the study of the orders and simple problems involving their combination and use, and continued in the three following years by means of minor and major problems involving the planning of all classes of buildings from the simplest to the most monumental, is supplemented and rounded out by exercises in the various methods and media of rendering and by a thorough course in freehand and modeling.

The materials and methods of all trades and professions engaged in building operations are systematically studied in the Construction classes throughout the four years of the program. The writing of specifications for each branch in labor is studied synchronously. Practical work in the various trades is given so that the student may know good work and thus be able to superintend construction intelligently. The practical lessons are supplemented by trips to the important building operations and industries in the neighborhood of the University.

The standard hand-books and mill-books are used as supplementary text-books.

Graphic methods of determining stresses in beams, girders and trusses of all forms, are studied and numerous practical problems solved.

Working drawings and detail of construction are made under office conditions.

Broadly speaking, it is the purpose of the College in outlining the construction courses to equip the student to solve by *office methods* any problem he may meet in ordinary practice; it is taken for granted that graver problems requiring a deep knowledge of the higher mathematics may well be left to the architectural engineer.

In the last year of the program a series of lectures are given on estimates, contracts, law, business relations and professional ethics and practice. Architects of high professional standing will give a number of lectures in this course.

A history of architecture and of the allied arts is studied in a course covering four years. The method is a combination of lectures, recitations and research.

Courses in English, history, economics and philosophy complete the curriculum.

In the Graduate Year advanced work in criticism and research is done and larger and more complicated problems are given in design.

Thesis. The senior year is given up largely to the working out of a thesis in design.

ENGINEERING PROGRAM

The science of engineering has long since outgrown the practical limit of one man's abilities. To be thorough, the engineer must specialize. One of his specializations is in Architecture. His services are needed to frame important buildings, to design their foundations and to protect adjoining property while they are in erection. The College offers the Program in Architectural Engineering because there is need of the service of the men who complete it.

Students desiring to become Architectural Engineers should have a bent for mathematics and for painstaking, exact drafting.

The program of studies differs from that of the Program in Design chiefly in the following particulars: Courses in pure and applied mathematics are given more prominence; the more important construction courses go deeper into theory; freehand work ends with the second year; the study of Historic Ornament and the Histories of the "Allied Arts" is omitted; and a relatively greater amount of time, increasing each year is spent in structural design.

The Graduate year is largely spent in the solving of problems of the first order in architectural engineering.

EXPLANATION OF "HOURS"

A class hour means one hour of recitation or lecture and one to two hours of preparation. A freehand or design hour means at least two actual hours in the drafting room.

PROGRAM IN DESIGN

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	154	I	English	4	154	I
El. of Arch.	4	122	I	El. of Arch.	4	122	I
Construction	4	121	I	Construction	4	121	I
Language*	5	...	I	Language*	5	...	I
Drawing	2	141	Ia	Drawing	2	141	Ib
Arch. Drawing	2	144	IV	Arch. Drawing	2	144	IV

SOPHOMORE YEAR

English	3	155	II	English	3	155	II
Design	8	122	II	Design	8	122	II
Construction	3	121	II	Construction	3	121	III
History	4	161	II	History	4	161	II
Drawing	2	142	IIa	Drawing	2	142	IIb
Graphics	1	122	VI	Graphics	1	122	VI
Theory of Plan	1	123	VII				

JUNIOR YEAR

Pol. Science	5	187	VI	Elective	4		
Design	8	192	III	Design	8	122	III
Hist. of Arch.	3	123	I	History of			
Hist. Ornm'nt.	2	119	II	Architecture	3	119	I
Drawing	2	120	IIIa	Drawing	2	142	IIb
Heat and Vent	1	142	IV	Sanitation	1	121	VI
Electricity	1						

SENIOR YEAR

Philosophy	4	185	X	Philosophy	4	185	X
History of				Bus. Ethics	1	122	I
Art	2	120	IIIa	History of Art	2	120	IIIb
Drawing	2	142	IVa	Drawing	2	142	IVb
Design	10	144	IV	Modeling	1	143	V
				Design	10	123	IV
				Thesis			

*French, Latin or Spanish.

Mathematics may be substituted for the Language of the Freshman year provided the student has had at least two years of Language.

PROGRAM IN ARCHITECTURAL ENGINEERING

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	167	I	Anal. Geom.	5	167	II
English	4	154	I	English	4	154	I
Construction	4	120	I	Construction	4	120	I
Drawing	3	143	I	Drawing	3	143	I
Drawing	2	141	Ia	Drawing	2	141	Ib
El. of Arch.	5	122	I	El. of Arch.	5	122	I

SOPHOMORE YEAR

Calculus	5	167	III	Calculus	5	168	IV, V
Physics	5	187	II	Physics	5	187	II
Des. Geom.	2	144	III	Physics	3	188	III
Construction	3	121	II	Des. Geom.	2	144	III
Design	5	122	II	Construction	3	121	III
Drawing	2	142	IIa	Design	5	123	II
History	5	164	VII	Drawing	2	142	IIb
				Pol. Science	5	192	VI

JUNIOR YEAR

Anal. Mech.	5	136	VIII	Anal. Mech.	2	136	VIII
Sanitary Eng.	2	138	XIII	Mechanics of Materials	3	136	X
Electricity	1			Sanitary Eng.	2	138	XIII
Heating and Ventilating	1	121	V	Surveying	2	134	II, III
History of Architecture	2	119	I	History of Architecture	2	119	I
Struct. Design	8	123	V	Struct. Design	8	123	V
Philosophy	4	185	X	Philosophy	4	185	X

SENIOR YEAR

Bridges and Roofs	5	139	XIV	Grap. Stat.	5	139	XV
Drawing	3	144	VI	Bus. Ethics	1	122	I
Structural Design	10	123	VI	Structural Design	10	123	VI
				Thesis			

THE SHORT PROGRAM

The scheme of studies for the Short Program comprises most of the work of the complete program that is essentially architectural.

Ordinarily, the same entrance subjects are demanded for the Short Program as for the Programs in Design and Engineering. A student who has not had the regular preparatory subjects but who is sufficiently mature and has had enough practical experience to warrant his following the work with profit, may be allowed to take up the courses in the Short Program. Mathematics and Physics must be taken in regular form if not previously studied. The ability to write correct English is a requisite for a Certificate of Proficiency in Architecture.

SHORT PROGRAM

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Construction	4	120	I	Construction	4	120	I
Architectural Drawing	2	144	IV	Arch. Drawing	2	144	IV
Drawing	2	141	Ia	Drawing	2	141	Ib
Elements of Architecture	12	122	I	El. of Arch.	4	122	IV
History	5	164	VII	Design	8	122	II
				Theory of Planning	1	123	VII

SECOND YEAR

Hist. of Arch.	3	119	I	Hist. of Arch.	3	119	I
Construction	3	121	II	Construction	3	121	III
Graphics	2	122	VII	Graphics	2	122	VII
Heat. and Ventilation	1	121	V	Sanitation	2	121	VI
Electricity	1			Business Ethics	1	122	I
Drawing	4	142	IIa, b	Drawing	4	142	IIIa, b
Design	8	122	III	Modeling	2	143	V
				Design	8	122	III

THE COLLEGE OF LAW

Phenomenal as has been the growth of the University in the various Colleges of Arts and Letters, Science, Engineering and Architecture, in respect of new departments formed, added facilities for teaching, increase in the number and special character of the teaching facilities, and general efficiency, nowhere does this development appear more marked than in the College of Law.

Established in 1869 and reorganized in the year 1883, the department continued its course in a modest way under the personal supervision of the Dean. Within recent years, however, it has grown from a school of fifty students in charge of one instructor to a student body numbering approximately two hundred taught by a faculty of seven men. The lecture room, study hall and library, already enlarged to twice their original size, have become too small and plans are considered for the early erection of a law building which is to be devoted exclusively to the needs and work of the College of Law. At present the lecture rooms of Science and Walsh Halls are improvised and used in the administration of the department.

THE LAW LIBRARY

The law library, containing approximately four thousand volumes, is adequate for the present needs of the department. It includes the commentaries, text books and treatises of the old school of law writers as well as the works of the modern school of text writers and case book authors. The reporter system is large comprising the entire National Reporter System, the Lawyers' Reports Annoted, the United States and Federal Reports, American Reports, English Law Reports, the Indiana Supreme and Appellate Court

Reports and the Vermont State Reports. There are also the principal law dictionaries, digests, encyclopædias, leading case reports and statutes.

The Law Library is connected with the lecture room and courtroom and is kept and maintained apart from the University Library. It is in charge of the law librarian and is open to the use of the students throughout the day and evening. A large, well-lighted room, fully equipped for study, is provided for the students of the department.

COURTROOM

The main lecture room is equipped with a judge's bench, jury box and officers' stations for use in the conduct of court procedure and trial practice.

COURSE OF STUDY

The prescribed course of study in the College of Law covers a period of three years and leads to the degree of Bachelor of Laws. An optional fourth year of special study in substantive law and practical procedure leads to the Master's Degree. The degree of Doctor of Laws (LL. D.) or Doctor of Civil Law (D. C. L.) presupposes the degree of Bachelor of Laws and a Bachelor's degree in Arts or Science.

Supplementing the course in law, which is complete and thorough in itself, the law students are given the advantage of special courses in public speaking and debating, history, English, philosophy and economics. At Notre Dame where conditions are so conducive to study, so free from distraction and so favorable for acquiring a thorough and practical education, the ambitious and industrious student can easily avail himself of these special courses in the other colleges of the University without in the least impairing the full efficiency of the law course itself. Indeed, the system in vogue in the University and the environments make it possible for the earnest student to accomplish from a fourth to a third more work here than probably anywhere else in the country.

By special arrangement of studies a student may complete any of the four year courses in the College of Arts and Letters and the three year course in Law so as to entitle him to two degrees in a period of six years.

ORGANIZATION AND SYSTEM

The law faculty comprises seven resident instructors, all of whom are graduates of the leading law schools of the country and experienced in the practice of law, and three of whom have been regular judges of city, circuit and supreme courts. Four of the faculty devote their entire time and service to the School of Law while the other members of the faculty also engage in the law practice.

The classes of the course are arranged in groups according to their relationship and the logical order of their study and with due regard to the time to be devoted to each class subject. These classes are assigned to the various instructors with a view to the instructor's special qualification and experience to teach them. The course is conducted under the careful supervision of the dean of the department to the end that the best methods may be applied and the highest degree of efficiency attained in the teaching department, thereby assuring the students the greatest possible measure of success in the course.

A special advantage to the law student at Notre Dame is his daily association with the instructors and the personal assistance rendered him and the special interest taken in him by the law faculty as well as by the administrative officers of the University.

METHODS OF INSTRUCTION

Experience at Notre Dame has confirmed the opinions of eminent law teachers that the case method alone is not adequate to teach a thorough and comprehensive knowledge of the law. Excellent as the case method is for imparting a knowledge of the particular principles of the law applicable in the cases analyzed, a general idea of the law as a whole, its main features and its universal concepts can not be learned without the aid of the text book. Therefore the law is taught here by text book assignments as well as cases, both explained and illustrated by the lectures and class-room talks of the instructors. In addition to these daily assignments, frequent written tests and the quarterly examinations are given, and class records are kept of the students' work.

INTRODUCTION TO THE STUDY OF LAW

As an introduction to the study of law the students are given a course of preliminary lectures to acquaint them in a general way with the system of law as a whole, its various classifications and those concepts and principles underlying the whole law so necessary to an intelligent and successful study of the various branches of the law prescribed in the course for study These lectures may be briefly outlined as follows: the nature of law; law as it affects the individual, organized society and nations; the system of American jurisprudence; the common-law and equity systems, their origin, development and relation; our constitutional and statutory law systems and their relation to the common law; the sources of the law, custom, judicial decisions and legislation; judicial systems and the processes of the courts; higher court decisions as precedents and the reporter system; the law divided into two great branches, the substantive law and the law of procedure—rights and remedies—and these branches again divided respectively into the law of contracts, wrongs and property and practice, pleading and evidence, these in turn divided into the special branches of the prescribed course; where to find the law; how to study the law.

THE LAW AND HOW TO PRACTICE IT

The lawyer's profession is a practical one and most law students intend to practice the law. It is frequently said of the law schools of the country that their courses are not practical, that they teach the substantive law to the exclusion of the more practical branch of the law, the law of procedure.

The substantive law operates *proprio vigore* to establish the rights and obligations of parties. When such right is violated the substantive law creates a secondary right which is denominated a right of action. Then it is that the law of procedure applies, and it is the knowledge of this law that enables the practitioner to invoke the jurisdiction of the courts and the strong arm of the state to secure his client's rights and redress his wrongs. A law course, therefore, to be practical should teach not only the substantive law but also the law of procedure.

To meet this condition the law course as now prescribed at Notre Dame is intended not only to teach the law but how to practice it as well. Provision has been made for a systematic course in civil procedure and a thorough and practical court system to operate throughout the entire three years of study.

COURSE OF PROCEDURE

In addition to criminal procedure which is taught in the first year there is also a preliminary course in civil procedure consisting of the study of common-law and equity courts, the original writs and processes, the common-law forms of action and remedies and relief in equity. Not only does this serve as a beginning of the course in practical procedure but it enables the law student from the outset to better understand the substantive law taught through the application of the common-law actions and remedies. This course is followed in the second year by a complete course of pleading and practice at common-law, the making of issues in the various common-law actions, equity pleading in general and as applied in the federal courts, and pleading and practice under the code. The third year is devoted to the making of issues in the principal civil actions under the code, trial practice and appellate procedure. The course in federal procedure is also given in this year.

THE UNIVERSITY COURTS

These consist of the University Moot Court, the Notre Dame University Circuit Court and the Supreme Court of Notre Dame. These courts constitute a thorough and practical system and are kept in operation throughout the three year period of the law course. The University Moot Court is open to the freshmen law students for criminal pleading and practice immediately after the course in criminal law and prodecure. Hypothetical cases are submitted to regularly chosen grand juries and prosecuting attorneys and indictments are voted and returned. Warrants are issued, arrests made and attorneys appointed for the defendants. Motions to quash are argued, pleas entered and arguments made before the court and jury on the question of conviction or acquittal. Many hypothetical cases are submitted to the students for the preparation of affidavits and indictments thereon and for argument in the court. Thus all the students are given a start in court practice in their first year. The University Moot Court is kept busy throughout the junior year in the preparation and argument of cases on the law applicable to hypothetical statements of fact, principally in civil cases. When the law of evidence is taught in course of the second year the Notre Dame University Circuit Court opens, and here the students apply all the law of procedure, pleading, practice and evidence. Throughout the senior year practice is had with a view to teaching the students how to make trial records, save exceptions and avail themselves of alleged error on appeal to the Supreme Court. Each candidate for a degree is required to prepare at least one record and transcript together with an assignment of error and brief thereon in the Supreme Court of Notre Dame.

These courts are all fully organized, have their regular officers and official records. Four students are assigned to each case and all are thus made to engage in the active practice. It is thought that this system of procedure and practice will so qualify the graduate that he may with confidence in himself begin the active practice of his profession.

REQUIREMENTS FOR ADMISSION

Graduation from a four-year high school or preparatory school of recognized standing, evidenced by certificate from such school, will admit one to the freshman class of the College of Law as a candidate for the degree of Bachelor of Laws. In the absence of such certificate proof of established credits a satisfactory examination based on the schedule of studies for entrance into the various colleges of the University is required.

While this requirement will suffice for the present to admit one to the College of Law, yet the Law Faculty as well as the University Faculty strongly urge upon the prospective law student the adoption of one or the other of the following recommendations: first, that he enter upon the six-year period of study for the completion of a course in the College of Arts and Letters and the Law course, thereby to be graduated as the educated lawyer with greater assurance of success in his chosen profession of the law and with those superior qualifications which will enable him to achieve success in the other fields of life's endeavor where alone education can succeed. Second, if, for any reason, one can not devote so long a period of time to the course, that he enter the four-year course and acquire at least two years of higher, collegiate education to strengthen him in his qualifications for the legal profession and make his success the more assured.

Students coming from other recognized law schools will be admitted to such advanced standing in the College of Law as they have attained, such standing to be established by certificate from the former school or to be determined upon examination.

THE PRESCRIBED STUDIES

The classes in each of the groups of the following schedule follow each other in the order named, each having its allotted time and all to be completed within the thirty-six weeks period of the year. The logical order of the classes for study, however, is not to be found in each group but runs throughout the several groups. Thus, for instance, the subjects of contracts and agency in group two of the first year are followed by the law of sales in group three; crimes or public wrongs in group three are followed by private wrongs or torts in group two; the law of descent and wills in group two of the second year follows real and personal property in group one; federal procedure comes in the third year after common-law and code procedure in the second year, and so on.

The elective studies to be chosen are subject to the advice and direction of the Director of Studies of the University and the Dean of the College of Law.

In addition to the benefits of the University Court System, the senior law students have opportunity to attend the sessions of the Circuit and Superior Courts of St. Joseph County in South Bend, and also to examine the public records of the county for practical work. An elective course is provided for New York students in New York State Code Pleading and Practice.

PUBLIC SPEAKING AND DEBATING

The course in Public Speaking and Debating of the College of Law has been carefully designed with a view to the practical needs of the successful lawyer. Its aim is to develop in each student the power of convincing and persuasive speech and manner in public and forensic address. It emphasizes the qualities of clear enunciation, directness, and earnestness, which mark the effective speaker in the court room, or at the public or social gathering. The work covers three years and comprises for the most part practical training in debating and in delivering prepared addresses and impromptu speeches, followed by individual criticism and suggestions by the instructor. Written public addresses, before being prepared for delivery, must be handed to the instructor, and these will be given special attention and criticism, both in writing and in personal training by the instructor with a view to delivery in public. Text book work is omitted in this course, except in the first year with such students as give evidence of serious defects either in voice or in enunciation, and chief emphasis is placed upon the careful observation of the work of each student, with practical criticism of his defects and helpful suggestions for their correction.

The subjects chosen for work in this course will embrace, besides political, patriotic, and sociological topics of permanent interest, the important current national questions. It is believed in this way, the law student will be trained to become not only an able advocate in court, but likewise an influential public citizen in the community, the state, and the nation.

I. During the first year the work consists of brief discussions and debates on important public questions, and prepared speeches and addresses of moderate length, with a beginning made in impromptu talks. A thorough training in parliamentary practice will likewise, form a part of this year's work.

II. During the second year, longer speeches and debates will be required, and the writing and preparing of formal addresses will begin. Considerable attention will also be given during this year to impromptu speeches, and at intervals the class will organize itself into a practical legislative assembly to discuss vital quesions of the day and to apply the rules of parliamentary procedure.

III. In the third year every man will be required to prepare his debates, speeches and addresses in such a manner and of such length as to be suitable for delivery in public, and to be ready on short notice to appear and deliver one of these speeches on a public occasion. At this stage in the student's training, he is expected to be able, on any occasion, to speak fluently, intelligently and effectively on a question of general public interest.

GRADUATE COURSE

The graduate course leading to the Master's Degree is made up of studies in the following subjects:

Jurisprudence, Roman Law and Modern Codes, International Law, Admiralty, Administrative Law, Legislative Bill Drafting, Statutory Construction, Medical Jurisprudence, General Review of the Substantive Law and Procedure, Practice in the University Courts.

THE SCHEDULE OF CLASSES

FIRST YEAR

Group 1. (*36 weeks, 3 periods a week*).

Elements of Law with Introductory Lectures, 12 weeks. Common-law Courts, Actions and Procedure, 12 weeks. University Moot Court, 12 weeks.

Group 2. (*36 weeks, 5 periods a week*).

Contracts, 18 weeks. Agency, 8 weeks. Torts, 10 weeks.

Group 3. (*36 weeks, 5 periods a week*).

Criminal Law and Procedure, 18 weeks. Persons and Domestic Relations, 9 weeks. Sales of Personal Property, 9 weeks.

Group 4. (*36 weeks.*)

Public Speaking I, 36 weeks, 1 period a week. English I, 36 weeks, 4 periods a week. Political Science VI, 18 weeks, 5 periods a week. History VII, 18 weeks, 5 periods a week.

SECOND YEAR

Group 1. (*36 weeks, 4 periods a week*).

Property, Real and Personal, Mortgages and Liens.

Group 2. (*36 weeks, 4 periods a week*).

Bills of Exchange and Promissory Notes, 14 weeks. Damages, 5 weeks. Law of Descent, Wills and Probate Practice, 17 weeks.

Group 3. (*36 weeks, 4 periods a week*).

Equity Jurisprudence and Trusts, 15 weeks. Quasi-Contracts, 5 weeks. Carriers and Bailments, 8 weeks. Insurance, 8 weeks.

Group 4. (*36 weeks, 3 and 2 periods a week*).

Making of Issues at Common-law, 6 weeks. Code Pleading, 8 weeks. Evidence, 22 weeks. Court Practice: University Moot Court. Notre Dame University Circuit Court. 2 periods a week.

Group 5. (*36 weeks, 4 periods a week.*)

Logic, 18 weeks. Ethics, 18 weeks. Public Speaking II, 36 weeks, 1 period a week.

THIRD YEAR

Group 1. (*36 weeks, 4 periods a week*).

Private Corporations, 18 weeks. Public Service Companies, 6 weeks. Municipal Corporations, 10 weeks.

Group 2. (*36 weeks, 4 periods a week*).

Constitutional Law, 14 weeks. Suretyship and Guaranty, 10 weeks. Partnership, 8 weeks. Briefing and Legal Ethics, 4 weeks.

Group 3. (*36 weeks, 4 periods a week*).

Conflict of Laws, 10 weeks. Federal Court Jurisdiction and Practice, Law and Equity, 8 weeks. Bankruptcy, 3 weeks. Judgments, Executions, Attachment and Garnishment. The Extraordinary Remedies. Conveyancing, Abstracts and Titles. Drafting Legal Instruments, 15 weeks.

Group 4. (*36 weeks, 3 periods a week*).

Making Issues in Civil Actions under the Code. Trial Practice. Appellate Procedure, 36 weeks. Notre Dame University Circuit Court and Supreme Court of Notre Dame, two sessions a week for 36 weeks.

Courses of Instruction

(In the description of the courses of instruction an hour means forty-five to sixty minutes in the recitation or lecture room and at least one hundred and twenty minutes in the laboratory, the drawing room or the shop. A term means a half year, or eighteen months.)

ANATOMY

I.

Human Histology. Laboratory work and demonstrations. Preparations of the tissues and organs of the human body given to each student, and their structure demonstrated. This course is taught in connection with Course I. under Human Physiology.

II.

Human Histology. Lectures, recitations and laboratory work. The work covers a thorough course in Normal Histology, with the methods of hardening, staining, embedding, section cutting, and mounting of tissues. Careful work on the nervous system--brain and spinal cord, termination of nerve fibres, etc. Drawings made from each preparation.

[Two laboratory hours a week for two terms.]

III.

Human Anatomy. Lectures and recitations. Osteology and the descriptive anatomy of the muscular, vascular and nervous systems and of the organs of special sense. The anatomy of the viscera.

[Four hours a week for two terms.]

ARCHITECTURE

COURSES OF INSTRUCTION

I.

Ancient and Classic Architecture. The work of the ancient Egyptians, Babylonians, Greeks and Romans to the reign of Diocletian.

Mediæval Architecture. A study of the development of architecture from the fifth to the fifteenth century.

Mosaics, sculpture, stained glass and iconography are studied in relation to the architecture of this period.

Renaissance. A study of the humanist movement of the 15th century in Italy, the Renaissance in France and England. French and Italian landscape architecture.

Modern. The Gothic and classic revivals; national traditions and taste in Europe during the 19th century; modern German architecture; European and American city plans and park systems; colossal architecture in the U. S. European influence in America.

[Three hours a week for two terms.]

II.

Ornament. Color decoration in stained glass and mosaic; tapestries and furniture design are studied technically and historically.

[Two hours a week for one term.]

HISTORY OF ART

III.

(a) **History of Painting.** A study of the great periods in the various schools of painting from the Renaissance in Italy to the present time.

[Two hours a week for one term.]

(b) **History of Sculpture.** A study of classic, mediæval and renaissance sculpture, especially in its relation to architecture.

[Two hours a week for one term.]

CONSTRUCTION

I.

The first year work covers the ordinary building trades where extensive calculations are not involved.

Building materials, masonry, carpentry, roofing, interior woodwork, plastering and painting with the specifications of each trade are studied and working drawings of a simple dwelling are made.

[Four hours a week for two terms.]

II.

Steel Construction. Ores and manufacture of iron and steel; theory of beams, designing, detailing and shop work of beams; columns, calculation of single section and built up steel columns, girders, steel frame work for buildings, wind bracing and fireproofing, foundations, soils piling.

[Three hours a week for one term.]

III.

Re-enforced Concrete. Floor slabs, beams, girders and columns.

[Three hours a week for one term.]

In all courses in construction students are required to draw a series of plates illustrating the methods of making working drawings and to become acquainted with the typical forms of construction.

IV.

Heating and Ventilation. Theory and practice of heating and ventilating buildings.

[One hour a week for one term.]

V.

Sanitation. Water supply and purification; sewage disposal; plumbing of buildings.

[One hour a week for one term.]

VI.

Graphical Statics. Analytical and graphical statics; analysis of stresses in trusses, design of roof trusses.

[One hour a week for two terms.]

VII.

Professional Practice. Laws affecting clients and architects; building laws, professional ethics.

[One hour a week for one term.]

DESIGN

I.

Elements. A technical detailed study of the construction and appropriate use of walls, openings, the five orders of Vignola, arches, vaults, roofs, by means of carefully drawn and rendered plates and the use of these elements in simple problems in design.

[Eight hours a week for two terms.]

The study of design is conducted by means of problems and criticisms. The problems vary in length from sketch problems, requiring only a few hours for their solution to major problems requiring four weeks or longer.

With each problem is given definite requirements such as might be imposed by a client. After the various studies are made and the drawings presented they are marked and criticised by the instructor.

These courses are divided as follows:

II.

Problems in composition involving the use of elements studied in the first year.

[Eight hours a week for two terms.]

III.

Problems in composition requiring the study of plans.

[Eight hours a week for two terms.]

IV.

Larger architectural compositions including interior decoration and landscape design.

[Ten hours a week for two terms]

Senior Thesis. In the second term of the senior year the student must work out a thesis design for a large architectural group including details.

V.

Structural Design. These courses have the same relative importance as the courses in design. The analogy goes further, the work is given as major and minor problems of varying degrees of difficulty and is judged and marked in the same manner. The scope of the problems will vary from the making of an ordinary footing plan to the framing of the structural steel of a large dome.

[Eight hours a week for four terms. Ten
hours a week for two terms.]

VII.

Theory of Planning. The study of the requirements of different groups of buildings:

(a) Domestic buildings.
(b) Ecclesiastical planning in relation to service.
(c) Hospitals, schools, libraries, public buildings.

[One hour a week for one term.]

ASTRONOMY

Astronomy. Practical. This course is designed to meet the requirements of Civil Engineering students and to give them the training and information necessary for intelligently executing certain departments of work to which they may be assigned in the course of their professional career. The course comprises a study of astronomical instruments as well as instruments of more precision than those used in ordinary surveying. The adjustments and use of these instruments are considered, and instruction is given in methods of observation and computation; different methods for finding latitude, longitude and time are studied in detail, and the methods for finding right ascensions and declination; methods of making observations and their adjustments, and discussion of errors. Conversion of solar time into sidereal, and sidereal time into solar.

A course in Least Squares is given with Practical Astronomy and comprises a study of a review of the theory of probability; errors and their probability, the probability curve, and probability integral; also the solution of observational equations, average error, mean error, approximate formulas and propagation of errors; normal equations and formulas fitted to observations.

[Three hours a week for one term.]

BACTERIOLOGY

Lectures and Laboratory Work. Lectures on the form, structure, reproduction and classification of bacteria. The relations of bacteria to disease, etc. The principles of sterilization, thermal and chemical, are pointed out. The early part of the laboratory work is occupied in the preparation of the various culture media and in studying pure cultures of certain non-pathogenic bacteria in these media. Observations on the microscopic characteristics of bacteria and special attention to the microscopic technique in bacteriological work. Later on in the course some time is devoted to practice in the isolation and identification of pathogenic germs by the various staining processes. Inoculation of animals. Bacteriological investigations of water, air and soil.

[Five hours a week for one term.]

BIOLOGY

I.

Elementary principles of Biology, also Human Physiology. This course is primarily intended for students of the College of Arts and Letters.

[Four hours a week for two terms.]

II.

A general course in Biology for students in the College of Science. There will be a regular laboratory course, one period a week.

[Five hours a week for two terms.]

BOTANY

I.

Botany. (a) Organography. Lectures and recitations on the morphology of the root, leaf, flower, fruit and seed; the development of the embryo and the processes of pollination and fertilization. (b) Cytology and Histology. The study of the vegetable cell, of its products, of cell formation, of plant tissues. (c) General Morphology. The structure, growth, reproduction and general classification of the algae, fungi, lichens, mosses, ferns, and the higher plants. (d) Plant Physiology. Special notes on Cytology, Plant Histology and Plant Anatomy by the professor.

[Four hours a week for two terms.]

II.

Botanical Laboratory. Supplementary to Course I. Special microscopical study of thallophyta, bryophyta, pteridophyta and spermaphyta referred to in Course I. Drawings must be made of all plants examined. Plants under these headings are collected and put before the student that he may become familiar with their morphology, structure and classification. The course is to accompany or to be preceded by Course I. Provision is also made in this course for students in pharmacy to take a special laboratory course in pharmaceutical botany. Study of the determination and classification of the simpler plants. The analysis of the phanerogams occupies the time during the spring months and the student is made familiar with the habitat and characteristics of the local flora. *Special Notes for Histology.*

[One laboratory hour a week for two terms.]

III.

Advanced Botany. Lectures, recitations, demonstrations. The work of this course is essentially the same as that laid out in *Strasburger's* or *Vine's* text-book of Botany. Special study is made of the physiology, ontogeny, phylogeny, ecology and classification of plants. Special notes by the professor.

[Three hours a week for two terms.]

IV.

Laboratory for Advanced Botany. Supplementary to Course III., and either following or accompanying it:

(a) **Advanced Plant Histology and Physiology.** Half of the time alloted for laboratory work is devoted to plant histology and physiology. The student is required to study practically the method of killing, fixing, embedding, sectioning, staining, mounting and drawing of plant tissues.

(b) **Plant Classification Advanced.** The other half of the laboratory work is devoted to the determination and classification of the more difficult plants, the compositae, grasses, mosses, myxomycetes, etc. Herbarium study is required, as well as preparing and collecting plants for preservation. During spring and autumn frequent excursions into the neighboring fields and woods are made for the purpose of studying and collecting for preservation the local aquatic and land flora.

[Three hours a week for two terms.]

V.

Systematic Botany. Principally laboratory and herbarium work in special groups of phanerogams and cryptogams. Study of nomenclature and classification of plants. This course is designed to meet the needs or inclinations of students specializing in botany. Library, reference books and seminar work.

Graduate Work in Botany. (a) Original research in systematic botany. (b) Plant histology and cytology under direction of Dr. J. A. Nieuwland. Preparatory to the Master's or Doctor's Degree.

CHEMISTRY

I.

(a) **General Chemistry.** A minor course dealing with the general principles of chemistry and embracing a study of only the commoner elements and their typical compounds.

[Four hours a week for one term.]

(b) **A Laboratory Course** covering in the laboratory the work of Course (Ia.) and designed to accompany it.

[Three hours a week for one term.]

II.

Advanced Inorganic Chemistry. Lectures and recitations. A complete study of the elements and their most important compounds, following the classification based on Mendeléeff's Law, and including a discussion of the theories of the science.

[Two hours a week for two terms.]

III.

Experimental Chemistry. A Laboratory course to accompany Course II., the work consisting of the preparation by the student of the elements and their more typical compounds, determination of molecular weights, verification of the fundamental laws of chemistry, etc. During the latter part of the course, there is taken up the study of the reactions involved in the separation and detection of the more common inorganic bases and acids, the analysis of salts, mixtures of salts, and the complex substances, such as earths, ores, ashes, etc. Text-book, supplemented with lectures.

[Four hours a week for two terms.]

IV.

(a) **Qualitative Analysis.** A course arranged for the students in Pharmacy, comprising a study of the commoner metals and acids, their reactions and separation. [Four hours a week for one term.]

(b) **Quantitative Analysis.** Course suited to the needs of the students in Pharmacy, comprising the determination of substances, both gravimetrically and volumetrically.

[Four hours a week for one term.]

V.

Quantitative Analysis. A laboratory study of the principles involved in the quantitative separation and estimation of substance, both gravimetrically and volumetrically. Complete analysis of a number of simple salts, like barium chloride, with partial analysis of many complex substances.

[Four hours a week for two terms.]

VI.

(a) **Elementary Organic Chemistry.** Lectures and recitations. A systematic study of the hydrocarbons and their derivatives, and the investigation of their properties. Special attention is given to the aliphatic and aromatic series.

[Five hours a week for one term.]

(b) **Experimental Organic Chemistry.** A course fitted to accompany the preceding, involving the preparation by the student in the laboratory of the most important and typical organic compounds and the investigation of their properties. Fifteen special reactions. Notes by the professor.

[Two hours a week for one term.]

VII.

(a) **Urine Analysis.** A course of laboratory exercises in the methods employed in the detection and estimation of the constituents of urine, pathologic as well as normal.

[One hour a week for one term.]

(b) **Toxicology.** Symptoms and treatment of poisoning. A chemical and physical examination of the common poisons to familiarize the student with their properties. Attention is also given to their separation from food and animal tissue.

[Two hours a week for one term.]

VIII.

Technical Chemical Analysis. Advanced courses intended for students specializing in chemistry. Special courses, at the option of the student, in

I. **Gas Analysis.**
II. **Water Analysis.**
IV. **Commercial Organic Analysis.**
V. **Oils and Fats.**
VI. **Iron Analysis.**

Text-books *and current journals.*

[Five to fifteen hours a week for two terms.]

IX.

(a) **Advanced Organic Chemistry.** An advanced course, intended for students specializing in chemistry. Lectures, recitations and discussions of special subjects of organic chemistry, synthetic chemistry, isomerism, and stereochemistry. Text-books and special reference works. [Two hours a week for one term.]

(b) **Advanced Organic Laboratory.** The time is spent principally in the making of organic preparations by methods demanding special care, skill and accuracy in the student.

[Six to eight hours a week for two terms.]

X.

Advanced Organic Laboratory. This course is for students in Pharmacy. Ultimate organic analysis, qualitative and quantitative; analysis of carbon, hydrogen, the halogens, sulphur and nitrogen in organic compounds by the various methods; also the determination of molecular weights of organic compounds. Text-books, special notes and reference work.

[Six to eight hours a week for one term.]

XI.

(a) **Electro-Chemistry.** Lectures and recitations on the principles of electrochemistry and their application in the chemical industries, separation of metals, the preparation of chemical elements and electro-synthesis of compounds.

[Two hours a week for one term.]

(b) **Electro-Chemical Laboratory.** A laboratory course accompanying Course XIa. Experiments demonstrating the laws and principles of electrochemistry, electrolysis, electro-synthesis and electrometallurgy. [One hour a week for one term.]

(c) **Electro-Chemical Analysis.** A laboratory course for those who have completed (a) and (b). Quantitative determination and separation of metals and anions electrolytically using stationary and revolving electrodes, the mercury cathode and their combinations.

[One hour a week for one term.]

XII.

History of Chemistry. The subject is divided into topics and epochs of special interest in the development of chemistry as a science. These are discussed at length, together with the biographies of the men who aided in their development. Lectures and recitations. Seminar and journal work for advanced students. Text-book; reference to chemical periodicals.

[Three hours a week for one term.]

XIII.

(a) **Physical Chemistry.** Lectures and recitations. A mathematical exposition of chemical theory on the subject of gas density, solutions dynamics, the phase rule, thermochemistry, photo-chemistry, etc.

[Three hours a week for one term.]

(b) **Experimental Physical Chemistry.** Laboratory work to accompany Course XIII (a). Vapor density methods, calorimetric demonstrations, molecular weight demonstrations by the freezing and boiling point methods, etc.

[One hour a week for one term.]

XIV.

Industrial Chemistry. Lectures, recitations and laboratory work. The consideration of chemical manufacture, fuels, etc., and the preparation in the laboratory of chemically pure substances, organic and inorganic. Special reference books and journals.

[Three hours a week for two terms.]

XV.

Advanced Quantitative. Mostly laboratory work in special methods for gravimetric and volumetric determinations of inorganic substances. Special reference work. [Five hours a week for one term.]

Research Work. Special facilities are offered to graduate students desiring to do original research work in chemistry, preparatory to the Master's or Doctor's degree.

CHRISTIAN DOCTRINE

All Catholic students are obliged to attend the courses in Christian Doctrine. The text used is the Exposition of Christian Doctrine by a Seminary Professor. The courses, I., II., III. are prescribed.

I. **Moral.**

II. **Worship.**

III. **Dogma.** Important questions of Church History will be discussed in this course.

Sacred Scripture. There will be selections from the Bible for each course, so that the whole Bible will be read in the three years' course.

IV. **Advanced Work in Christian Doctrine.** Special questions. This is an elective course.

V. **Church History.** An elective course for those who desire a more extended and a more detailed presentation than is given under III.

CIVIL ENGINEERING

I.

Descriptive Geometry. In this course are considered problems on the point, right line, and plane; single curved, double curved, and warped surfaces; problems relating to tangent planes to single curved, double curved and warped surfaces; intersection of surfaces; spherical projections, orthographic, stereographic; globular, cylindrical, and conic projections; construction of maps, shades and shadows; linear perspective; isometric projections; theory and plates. Numerous practical problems and exercises requiring the application of the principles of Descriptive Geometry, are added by the instructor.

[Three hours a week for two terms.]

II.

Surveying. This course comprises the whole theory of land surveying and leveling; the use and adjustment of the transit, compass, level, and plane table; methods of measuring; relocations of boundaries; supply omissions; obstacles to measurement; computations; field notes and plots; laying out land; parting off land; dividing up land; public land survey.

[Two hours a week for one term.]

III.

Surveying. Field practice and application of theory; adjustment and use of instruments in the field; solution of problems in the field, the theory of which is taught in the class room; practice in keeping field notes; computation and plots.

[One hour a week for one term.]

IV.

Surveying. This course is a more complete treatment of the theory of Surveying than Course II. It treats of the adjustment, use, and care of all kinds of engineering instruments; problems pertaining to solar attachment; topographical surveying with the transit and stadia; determining Hydrographic surveying which comprises a study of the methods of making soundings and locating the same; the use of bench-marks, gauges, and water levels; stream measurements, methods and instruments used. City surveying, including a study of re-surveys, topographic surveys, city plan, location of streets, width of grades, field notes, indexing and records.

[Four hours a week for twelve weeks.]

V.

Surveying. Exercises in the field in the adjustment and use of engineering instruments; stadia and plane surveying in the fields, leveling; practice in hydrographic surveying.

[One hour a week for one term.]

VI.

Geodesy. This is an elementary course prescribed for Civil and Mining Engineering students and comprises a study of the instruments and methods of observation, base measurements and field work of the triangulation; method of least squares, elementary course; calculation of the triangulation, the theory of probable errors; geodetic latitudes, longitudes, and azimuths. This is followed by a brief discussion of the figure of the earth.

[Four hours a week for six weeks.]

VII.

Railroad Surveying. This course comprises all the theory pertaining to reconnoissance and preliminary surveying for a railroad; theory and maximum economy in grades and curves; location of curves by deflection angles and offsets; obstacles to location of curves; special problems in curves; theory of compound curves; turnouts and crossings; curving the rail on curves and elevation of outer rail; easing grades on curves; vertical curves; earthwork and prismoidal formula; theory of excavation and embankment; correction in excavation on curves; cross-section leveling; theory of the transition curve and practical applications.

[Four hours a week for one term.]

VIII.

Railroad Surveying. Exercise in the field; staking out and running tangents, simple, compound and transition curves; execution on the ground of many problems previously treated theoretically; survey for a short line of railroad, leveling, cross-section work, and setting slope stakes; making profiles and maps; calculating the necessary excavations and embankments and cost of construction; culverts.

[One hour a week for one term.]

IX.

Analytic Mechanics. The aim of this course is to prepare students of engineering for the study of the courses of applied mechanics. The course comprises a study of the fundamental principles of statics, kinematics and kinetics. The subjects selected are studied with the object of thoroughly preparing the engineering students to pursue the technical and practical branches of their respective courses. Some of the topics considered in this course are: work, energy, conservation of energy; power, composition and resolution of forces, center of gravity, center of mass, moment of inertia, acceleration, dynamics of rigid bodies, laws of friction, etc. [For Civil Engineering Students, five hours a week for first term. Two hours a week for second term.] [For Students in Electrical, Mechanical, Chemical, and Mining Engineering, five hours a week for eighteen weeks.]

X.

Mechanics of Materials. This course is intended to meet the requirements of engineering students, and to prepare them, by study of the action and effect of forces on beams and structures, to design economically and intelligently the parts entering into a complete structure. The course comprises a study of the elastic and ultimate strength and ultimate deformation of the materials of engineering, their properties and method of testing, and discussion of cases of simple stresses. The general theory of beams including cases of simple and cantilever beams, overhanging, fixed and continuous beams is thoroughly investigated. Columns are examined according to Euler's, Rankin's and other formulae, and results compared. Some of the other subjects considered in this course are torsion of shafts, the transmission of power by shafts, apparent combined stresses, such as flexure and compression, flexure and torsion, etc. Compound columns and beams, reinforced concrete beams, plate girders and other forms. Then is studied the subjects, resilience and work, impact and fatigue, true internal stresses, centrifugal tension and flexure, unsymmetric loads on beams, the course closing with a study of the mathematical theory of elasticity.

[For students of Civil Engineering, three hours a week for two terms.]

[For students of Electrical, Mechanical, Mining and Chemical Engineering, three hours a week for eighteen weeks.]

XI.

Roads and Pavements. This course is intended to familiarize the student with the practical details of laying out and constructing highways, the method of drainage, grading, and most suitable road covering, the improvement of streets in cities and materials used for paving and covering. The manner of preparing the street before paving is placed in position is fully considered and illustrated. The course includes a thorough discussion of the theory of pavements and a description of the various materials used, such as cobble and stone-block, asphalt, brick, wood and broken stone pavements. The method of preparing plans and specifications for the various conditions arising are considered and original plans are prepared by students. Attention is also given to the construction of street-car tracks in paved streets. [Two hours a week for one term.]

XII.

Engineering. This course is taken by students of Civil Engineering in the Senior year and teaches the best approved methods of constructing engineering works and the styles of structures suitable for different localities. The study is quite comprehensive, including the general theory of the arch and application of the voussoir arch; the theory of earth pressure, and the design of retaining walls; foundations suitable for structures of various classes in connection with which the student becomes acquainted, not only with the methods for ascertaining the bearing power of the foundation, but also the means for constructing deep foundations. The methods for tunnel construction, irrigating canals, river improvements, are included in the course and given by text-book and lectures. The part pertaining to masonry construction includes a study of the properties of stone, brick, mortar, the manner of testing foundations under water, the crib and open caisson process, the pneumatic process, the theory of masonry arches and design, arch centers, selection of site for bridge piers and arrangement of spans, the details of construction of bridge piers and manner of location, specifications for masonry, etc.

[Five hours a week for two terms.]

XIII.

Sanitary Engineering. This course is a study of the principles and methods of drainage and disposal of sewage in populous districts: shape, material and calculation of sewers; catchbasins, flushing and ventilation; separate and combined systems compared; pollution of rivers; chemical precipitation; results and costs of purification; general municipal and domestic sanitation; inspection of neighboring works.

[Two hours a week for two terms.]

XIV.

Bridges and Roofs. This course comprises a study of the different systems of trussed bridges and roof trusses, and the calculation of the strains produced when loaded in any manner, the weight of the structure and the effect of wind included. Both graphical and analytical methods are used. Besides the various systems of trussed bridges, which are studied in detail the plate girders, suspension bridges, cantilever bridges draw bridges, and roofs of various designs are given equal attention; the purpose being to familiarize the student with the different forms and enable him to design and to estimate the cost of construction.

[Five hours a week for one term.]

XV.

Graphic Statics. This course teaches the determination of stresses in framed structures by the graphical method. Shearing forces, bending moments, centers of gravity and moments of inertia are graphically determined by the application of the principles of the force and equilibrium polygons; also the determination of stresses in bridge trusses with parallel chord and with broken chords, caused by uniform loads and locomotive wheel loads; graphical determination of stresses in roof trusses, graphical treatment of the arch symmetrical and unsymmetrical cases, graphical methods of arch-ribs of hinged ends, and of fixed ends; stress diagrams; temperature stresses; braced arches; graphics applied to continuous girders. This course is supplemented by full explanations, notes, examples and problems.

[Five hours a week for one term.]

XVI.

Hydromechanics. This course is a thorough study of the theory of hydrostatics, hydraulics, and hydrodynamics, to which are added many practical exercises. The subjects studied are the transmission of pressures, center of pressures; velocity of flow from orifices of various shapes; fluid friction; Bernaulli's theorem with friction: Chezy's formula; Kutter's formula; flow over wires, and through tubes; flow in pipes; loss of head in friction and other losses; flow in conduits, canals, and rivers, velocities in cross sections; methods of gauging the flow, measurement of water power, dynamic pressure of flowing water; designing of waterworks and standpipes; hydraulic motors and relative merits; discussion of water wheels of different types, and a study of the conditions determining high efficiencies; classification of turbines, and a complete study and discussion of the different forms.

[For students in Civil Engineering, three hours a week for two terms. For students in Electrical, Mechanical, Mining and Chemical Engineering, two hours a week for eighteen weeks.]

DRAWING, ARTISTIC

In this department the aim is to lay a thorough foundation in drawing for those who wish to make Art a profession, but the courses are so arranged as to be accessible to other students. The system of teaching, which is that followed in the best art schools, is intended to develop the individuality of each student.

The work is done altogether from cast, objects and nature. The immediate surroundings of the University buildings, the lakes and the Saint Joseph River offer many beautiful subjects for the study of landscapes, and the classes are taken out in the summer for this study.

To the old collection of casts has been added a new one which was carefully selected at the National School of Fine Arts in Paris, where all the casts are moulded directly from the originals. The collection is as follows:

Full Figure. The Diadumenos (British Museum); the Doryphorus (Naples). These two figures are full size.

The following figures are reduced mathematically the Discobolus; the Venus of Milo; the Slave of Michael Angelo; the Achilles; the Fighting Gladiator (Louvre); and Houdon's Anatomical Figure.

Busts and Heads. Asiaticus (Paris); Brutus (Rome, the Capitol); Cato (Rome and Vatican); Cicero (Rome, the Capitol); Dante (Florence, Uffizi); Agrippa (Louvre); Venus (Vatican); Centurion (Naples); Ariadne (the Capitol); Psyche of Naples (Naples); Vestal (Vatican); Niobe (Vatican); the Two Daughters of Niobe (Florence.)

Among the old busts are the Apollo Belvidere, the Antinous, Bacchus, Juno, Mercury, Demosthenes, etc. Besides there is a complete set of decorative and architectural ornaments, taken from monuments of antiquity, the Middle Ages and the Renaissance, and of elements of the human figure (hands, feet, etc.) from the antique and some anatomical pieces.

COURSES

I.

(a) Form drawing in charcoal. Geometric figures and ornaments in outline. Charcoal drawing from still life. Pencil drawing from still life and nature.

[Five hours a week for one term.]

(b) Form drawing in charcoal. Ornamental figures in light and shade. Charcoal drawing from still life Pencil drawing from still life and nature.

[Five hours a week for one term.]

II.

(a) Cast drawing in charcoal. Parts of the human figure in outline. Pencil drawing from still life and nature. Water color painting from still life and nature.
[Five hours a week for one term.]

(b) Cast drawing in charcoal. Masks and busts in light and shade. Pencil drawing from still life and nature. Water color painting from still life and nature.
[Five hours a week for one term.]

III.

(a) Antique drawing in charcoal. Full figure in outline. Pen and ink drawing from still life and nature. Water color painting from still life and nature.
[Five hours a week for one term.]

(b) Antique drawing in charcoal. Full figure, light and shade. Pen and ink drawing from still life and nature. Water color painting from still life and nature.
[Five hours a week for one term.]

IV.

(a) Antique drawing in charcoal. Groups in light and shade. Life drawing in charcoal. Bust and full figure. Pen and ink drawing from still life and nature. Water color painting from still life and nature.
[Five hours a week for one term.]

(b) Antique drawing in charcoal. Groups in light and shade. Life drawing in charcoal. Bust and full figure. Pen and ink drawing from still life and nature. Pen and ink drawing from life. Water color paintling from still life and nature. Water color painting from life.
[Five hours a week for one term.]

Oil Painting. This course in oil painting includes still life, life, and nature studies.

Special Course in outdoor work in the fall and spring, in pencil, pen and ink, water color painting and oil painting.

V.

Modeling. In the spring term of the Senior year, for students of Architecture, modeling in clay is taken up. The objects modeled are architectural forms, copied from casts or made from the student's drawings of his own work, as his progress and ability may warrant.

[Two hours a week for one term.]

Class of Decorative Design. The object of this course is to prepare students for professional work in decorative designing of all kinds. They will take up the study of historical ornaments and will be taught the several principles of the arrangement of designs, and from personal sketches of plants and flowers will be shown the art of making original designs for wall paper, book covers, stained glass, carpets, interior decorations, metal plates, etc. No particular program is given out as the teaching is purely individual.

DRAWING, MECHANICAL

Drawing A and B (Elementary Freehand, Lettering, Geometrical Drawing, Elementary Projections) are required to take up drawing I.

Two hours of actual time in drawing are required for each credit hour in the schedule.

I.

Projection Drawing. This course consists in sketching with pencil from various models of different machine parts and drawing to scale with the use of instruments. The course also embraces the principles of projections, methods of shop-drawing, lineshading, tracing, blue-printing and the preparation of working drawings of complete machines.

[Three hours a week for two terms.]

II.

Machine Drawing. A continuation of Course I, embracing advanced work in machine drawing and the elementary principles of mechanical design with calculation of dimensions and construction of drawings from sketch-book notes.

[Two hours a week for two terms.]

III.

Descriptive Geometry. A series of accurate plates is made, illustrating the principles of orthographic and spherical projections, shades and shadows, perspective and isometric projections.

[Two hours a week for two terms.]

IV.

Architectural Drawing. Exercises in instrumental drawing, pencil and brush work and lettering, followed by problems in orthographic projections, intersections, shades and shadows and perspective with particular reference to architectural subjects.

[Two hours a week for two terms.]

V.

Topography. Pen and colored topographical drawing, conventional signs, map drawing from notes taken from surveys. This course must be preceded by Course I.

VI.

Stereotomy. This course comprises a study of the application of the principles of Descriptive Geometry to the determination of the forms and sizes of the stones used in the construction of the different classes of arches and masonry structures. This course is given by lecture in the drawing room, explaining the construction of templates, and the use of directing instrument; also explanations of methods of drawing plans, elevation and development of oblique arches, wing walls and the like. A certain number of plates and drawings is required, illustrating the methods of performing practical work.

Drawing and designing plans, elevations and sections of masonry construction, foundations, dams, piers, abutments, culverts, and arches.

[Two hours a week for one term.]

VII.

Bridge Designing. This course proceeds from simple framed girders to complete bridge-trusses of various designs,—required of Juniors in Civil Engineering Complete design of a railroad bridge and detail drawings,—a short general course of bridge designing.

[Two hours a week for one term.]

VIII.

Freehand. The principles of freehand drawing in pencil and pen from objects, and later from biological specimens, plants, animals and microscopical preparations. For students of Biology.

[Two hours a week for two terms.]

IX.

Freehand. Advanced drawing from plants and anatomical dissections of animals. Illustrations for publications. For students of Biology.

[Two hours a week for two terms.]

X.

Water Color. Drawing in water color from still life and nature.

[One hour a week for one term.]

XI.

Rendering in Water Color. The rendering of architectural drawings, including perspectives,—casting of shadows, color treatments of buildings and handling of foreground and background.

[One hour a week for one term.]

XII.

Pen and Ink. Rendering drawings in pen and ink from studies by noted artists in this branch of art; followed by rendering of original drawings.

[One hour a week for one term.]

ELECTRICAL ENGINEERING

I.

Applied Electricity. A course of lectures and recitations, supplemented by laboratory practice, on the general theory of electricity and magnetism and its application to practical work, as follows: Setting up and testing primary and secondary batteries, systems of call bells, electric and gas lighting appliances, fire and burglar alarms, telegraph and telephone lines, switch boards and accessories. Experiments with induction coils, magnets, switches, voltmeters, ammeters, wheatstone bridges, galvanometers and other measuring instruments. The study of direct current generators and motors, arc and incandescent lighting systems, street railway machinery and appliances, electric heating and forging, electrolytic process, etc.

[Five hours a week for two terms.]

II.

Applied Electricity. Lectures and laboratory work on the construction and testing of switches, magnets, measuring instruments, induction coils, etc. The calculation of sizes of wire and location of circuits for lighting and power, the experimental study of alternating current machinery and accessories.

If the student has acquired sufficient skill in handling tools in his workshop, he may design and build a small dynamo, starting with rough castings, doing all the fitting and finishing, winding and adjusting, and finally testing for insulation, efficiency, and adaptability to special purposes. This course must be preceded by Course I. (*Course I. and II. are required in the Short Program Electrical Engineering; they are elective for general students and those studying telegraphy*).

[Five hours a week for two terms.]

III.

Applied Electricity, Laboratory and Lectures on the use of electricity in buildings, systems of wiring, materials used, the Underwriters requirements for the installation of bells and telephones, electric lighting. The principles of photometry and illumination. For students in Architecture.

[One hour a week for one term.]

IV.

Dynamo Electric Machines, D. C. This course, given in the first term of the Junior year, consists of a detailed study of the laws of magnetism, magnetism of iron, electromagnets, etc., as applied to dynamo electric machines followed by a study of the properties, characteristics and physical reactions of dynamos, the operation of dynamos as generators, the operation of dynamos as motors, power losses in generators and motors, efficiency, ratings and guarantees, supplemented by a collection of special notes and the solution of a large number of numerical problems.

Prerequisite: Freshman and Sophomore Physics and Mathematics.

[Four hours a week for one term.]

V.

Direct Current. This course is a continuation of Dynamo Electric Machines and comprises a thorough study of the practical operation of dynamos, station equipment, storage batteries, characteristic curves, electric distribution and wiring, armature windings, photometry and electric lighting, supplemented with notes and the solution of a large number of numerical problems and laboratory exercises.

Prerequisite: Dynamo Electric Machinery, Electrical Engineering IV.

[Three hours a week for one term.]

VI.

Alternating Currents. This course is designed to meet the needs of electrical engineering students and comprises a detailed and thorough study of the physical and mathematical relationship of quantities involved in alternating currents, properties of alternating currents, self-induction, capacity, the solution of alternating current circuits, alternators and transformers. The course is largely supplemented with special notes and lectures and the solution of a large number of numerical problems.

Prerequisites: Calculus and Electrical Engineering V.

[Five hours a week for one term.]

VII.

Alternating Current Machinery. This course, a continuation of VI, involves a detailed and thorough study of alternating current motors, synchronous motors, single phase commutator motors, converters, followed by a course in power transmission. Supplemented with special notes and lectures and the solution of problems. [Three hours a week for one term.]

VIII.

Problems of Electrical Engineering. A course intended for the solution of the more difficult problems met with in the preceding two courses, given under the direction of an instructor. This course accompanies VI and VII. [Two hours a week for one term.]

IX.

Designing. The designing and making of working drawings of switches, resistance and other electrical apparatus. Calculation of sizes of wire and location of circuits for lighting buildings. Complete drawing of direct and alternating current dynamos. Laying out plants for power and lighting. [Two hours a week for two terms.]

X.

Electrical Laboratory. Practical work at wiring buildings for lights and power, testing circuits for insulation and grounds, construction and operation of storage batteries, management and care of dynamos, characteristic curves of particular machines under different conditions, efficiency, tests of motors by absorption dynamometer methods, alternating current dynamo and transformer tests, the testing of storage batteries, and complete plant efficiency tests. Careful notes are taken. [Four hours a week for two terms.]

XI.

Hydraulic Engineering. This course is designed to equip the students of engineering with the fundamental principle of hydraulics with a view towards their application to the design of hydro-electric power plants The course consists of lectures, recitations and notes on hydro-statics, hydrodynamics, methods of measurement of flow, recognizance of water power, measurement of power, and materials of engineering.

This course is for the Senior students of Electrical Engineering. Prerequisites: Mechanics and Physics.

[Three hours a week for one term.]

XII.

Hydro-electric Power Plants. This course is designed to acquaint the student with the construction of hydro-electric power plants involving hydraulic construction in general, power house construction, power house equipment, i. e., water wheels, generators, etc., and power transmission. This course must be preceded by Hydraulic Engineering.

[Three hours a week for one term.]

XIII.

Electric Railways. Lectures and recitations on track and overhead construction, cars, trucks, motors and systems of control for both direct and alternating currents, sub-stations, operation and financial considerations. [One hour a week for one term.]

XIV.

Telephony. Laboratory and lectures on general principles, intercommunicating systems, switchboard systems, manual and automatic operation, cost of equipment, maintenance and depreciation.

XV.

Wireless Telegraphy and Telephony. Experimental practice and lectures on the theories involved in the construction and operation of the leading systems, oscillators and sending apparatus, detectors and receiving devices, tuning to prevent interference.

[Two hours a week for one term.]

XVI.

Illuminating Engineering. Lectures on the theory and operation of the various kinds of electric and other lamps, distribution of light and the location of lamps to produce the best illumination, practical problems and the study of particular installations, the cost per candle power or per candle foot including first cost, attendance, breakage and depreciation.

[Two hours a week for ten weeks.]

XVII.

Theory of Alternating Current Machinery. This is an advanced course on the theory of alternating current machinery, use being made of the complex quantity and vectors in the solution of problems. The course is supplemented by a course in Vector Analysis. Textbook, special notes and lectures.

XVIII.

Electrical Engineering Club. The Electrical Engineering Club is an organization composed of all the electrical engineering students of the University. Assigned papers on electrical engineering topics are presented and discussed. The meetings are under the direction of an instructor. Its purpose, in addition to imparting much useful information, is to give students fluency in speech and writing. Junior and Senior students are supposed to take an active part in the proceedings of the club. Engineers of prominence, not connected with the department, give frequent lectures on highly important electrical engineering subjects. The lectures and proceedings are published in the bulletin of the department. The club meets weekly. During 1915 and 1916, Mr. Lucius B. Andrus, Chief Engineer and Superintendent of the Indiana and Michigan Electric Co., gave a regular series of lectures to the Club. Mr. Frederick A. Bryan, President and General Manager of the Indiana and Michigan Electric Co., Mr. M. S. Caldwell and Mr. C. S. Clifford of the same company, gave occasional lectures.

XIX

Inspection Trips. Study of the larger power, lighting and telephone installations, also factory methods in several typical industrial establishments, trips to the hydraulic and steam generating plants along the St. Joseph river.

SUMMER THESIS

Students of the Electrical Engineering Department are supposed to write a thesis, or essay, of not less than one thousand words on some topic assigned to them in their Junior year. This essay will consist of a report on some electrical installations, or actual work performed by the student during the summer vacation.

GRADUATION

At the beginning of the Senior year the student selects a thesis for investigation and makes the first report on the same to the Director of the Department no later than the beginning of the second semester of the Senior year. By this time the student is supposed to have a clear outline of what he is going to do and to have gathered all the necessary data for the successful working out of his thesis. Reports on the progress of the thesis are made then (at regular intervals) to the Director of the Department for approval and suggestion. Two typewritten copies of the thesis must be filed with the Director of the Department no later than May 20.

ELOCUTION AND ORATORY

I.

Readings and Declamations. This course is designed to correct defects in pronunciation and emphasis. Each student is required to give two declamations.

[One hour a week for one term.]

II.

Readings and Declamations. Continuation of Course I. Each student is required to give three declamations.

[One hour a week for one term.]

III.

Practical Elocution. Exercises in breathing, voice culture and action. The principles of pronunciation and emphasis and their application in the reading of selections. [One hour a week for one term.]

IV.

Practical Elocution. Further exercises in breathing, voice culture, action. Quality, force, pitch and time. Minute speeches and declamations. Lectures on the principles of action.

[One hour a week for one term.]

V.

Oral Discussions. The application of formal logic to debating. Analysis of selected argumentative speeches, and the preparation of briefs. Courses III. and IV. and a course in logic are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for one term.]

VI.

Oratory. A study of the great orators of ancient and modern times. Each student is required to write and deliver a biographical oration on one of the great orators. Lectures on methods of public address. Courses III. and IV. above, and Course I. in English are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for two terms.]

VII.

Shakespearean Reading. The critical and artistic reading of two of Shakespeare's plays accompanied with stage action. The students present the play by scenes before the class. Courses III. and IV. are required for admission to this course. Sections are limited to twenty-four students. [One hour a week for two terms.]

VIII.

Assembly Work. This course is designed to supplement the other courses in this department. It consists of debates, short orations, minute speeches, declamations, impromptu and drill work in parliamentary law.

[One hour a week for two terms.]

ENGLISH

I.

Genung's Principles of Rhetoric. A study of the complete text. Frequent practice in simple theme work, versification. Writing in all literary forms and assigned readings.* [Four hours a week for two terms.]

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* Every Freshman will be obliged to follow a class in *correct English*, one hour a week, unless his written work gives evidence that he may be dispensed from this special exercise. Any student notably deficient in correct English will be obliged to take this course.

II.

(a) **Essay and Oration.** Intensive study.

[Three hours a week for one term.]

(b) **Poetry and the Poets.** Texts, theory and critical study.

[Three hours a week for one term.]

Practice in writing in all literary forms and assigned readings.

III.

Fiction. (a) The Short Story, technically, historically and critically considered.

[Three hours a week for one term.]

(b) The Novel, technically, historically and critically considered.

[Three hours a week for one term.]

Practice in writing in all literary forms and assigned readings.

IV.

The Drama. (a) Historical Survey of the Drama. Greek and Roman Dramatists. Liturgical, Morality and Miracle Plays. Technique of the Drama.

[Three hours a week for fourteen weeks.]

(b) Elizabethan Dramatists. Intensive study of Shakespeare.

[Three hours a week for sixteen weeks.]

(c) Modern Drama, from Sheridan to the present time. [Three hours a week for six weeks.]

Under all the subjects specified attention will be given to current productions with a view of properly acquainting the student with the writers of the day.

V.

Business English. This course is designed to meet the needs of students following the program of Commerce. Accuracy and speed in the various business forms will be demanded for credit in this subject.

[Three hours a week for two terms.]

Graduate Work in English. Students wishing to do advanced work in English will be provided with library facilities and led through the usual work for the degree of Master of Arts or Doctor of Philosophy.

The major subject on approval of the Faculty of English may be any special aspect of a literary form or epoch, or a comparative study of related authors.

Seminar work, the study of texts, and special lectures by professors make up the course.

GEOLOGY

I.

Principles of Geology. Lectures, recitations, demonstrations. The study of the general features of the earth; the material composing the accessible parts of the earth; the arrangements of the material in rocks; the causes of geological changes; the history of the earth and the various forms of life that existed in the different periods of successive geological ages.

[Four hours a week for one term.]

II.

Mineralogy. Lectures, recitations, and laboratory work. A study of the principles of crystallography and the classification of minerals, accompanied by practice in the laboratory and museum in the determination of minerals, especially the ores. Blow-pipe analysis.

[Two hours a week for one term.]

III.

Mineralogy. The object of this course is to train the student to identify minerals by their physical characteristics, such as crystal form, cleavage, color, hardness and specific gravity without having to resort to blowpipe or chemical tests except in the rare minerals. Recitations are made upon drawers of minerals in which the student points out the distinguishing features by which he recognizes the different minerals.

[Three hours a week for two terms.]

IV.

Crystallography. In this course there is made a complete study of the laws in the different systems of crystal formation, by means of laboratory work in models, natural crystals and cleavage specimens.

[Five hours a week for one term.]

V.

Petrography. This course is a study of rocks with regard to their classification, structure, mineralogical constituents, chemical composition and alternations; a study of the physical characters of the minerals shown in thin transparent rock sections with the aid of the microscope; a practical study of rocks in the hand specimens and also in summer field work.

[Two hours a week for two terms.]

VI.

Geology, Physical and Chemical. A course treating of the origin and alterations of rocks, of general eruptive and earthquake action, metamorphism, faulting, jointing, and mountain building: the action of atmospheric agencies, surface and underground water. All of which subjects are especially considered in their application to mining pursuits.

[Three hours a week for one term.]

VII.

Geology, Economic Mining. A study of the genesis of the useful ore deposits, both metallic and non-metallic; an analysis of the relation existing between structural, dynamic and chemical geology, petrography and the ore deposits encountered in mining operations. Frequent reference is made to the bulletins, monographs and reports of the United States Geological Survey.

[Two hours a week for one term.]

GERMAN

I.

Grammar. Translation from German into English of simple prose; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

[Five hours a week for two terms.]

II.

Grammar. Translation into German of narrative prose and selections from history. Sight reading of selections from history.

[Five hours a week for two terms.]

III.

Sight reading of plays, poems and prose writing. Translation of selections from history and literature; original essays.

[Four hours a week for two terms.]

GREEK

I.

Homer. Iliad. Text Edition.

Lysias. Select Orations.

St. John Chrysostom. Eutropius. (*Elective*).
Prose Composition.
[Five hours a week for two terms.]

II.

Homer. Odyssey. Text Edition. (*Elective.*)
Herodotus. Selections.
St. Basil. De Profanis Scriptoribus.
St. Gregory. Machabees. (*Elective.*)
Advanced Prose Composition.
[Five hours a week for two terms]

III.

Demosthenes. The Speech on the Crown, or the Olynthiacs and the Philippics.
Thucydides. One book, *selected.* (*Elective.*)
Aeschylus. One play, *selected.* (*Elective.*)
Sophocles. Oedipus Tyrannus.
[Four hours a week for two terms.]

IV.

Greek Literature.
Euripides. One play, *selected.*
Aristophanes. One play, *selected.*
Pindar. Selected Odes. (*Elective.*)
Plato. The Apology and Crito.
Thesis. Subject assigned or selected with approval of the dean. About 2500 words in length.
[Four hours a week for two terms.]

Greek Fathers: St. Basil: The Martyr Gordius.—St. John Chrysostom: The Return of Bishop Flavian.—St. Gregory Nazianzen: Funeral Oration of Caesarius. (*Electives.*)

Graduate Work in Greek. Advanced courses of instruction in the Greek language and literature will be provided for graduate students who look forward to the Master's or Doctor's degree. The center of work will be the Greek seminar, devoted to the interpretation of passages selected for that purpose by the director of the seminar, and to a critical study of one particular author or group of authors in the same department of Greek literature; as for instance, Homer, Plato, the orators, the historians, the dramatists, etc.

The work of the seminar will be supplemented by lectures on the history of comparative philology, on comparative grammar, and on the Greek dialects.

For those who desire a broader basis for their linguistic studies, an elementary course in Sanskrit will be offered.

HISTORY

ANCIENT HISTORY

I.

(a) **Ancient Greece** to the conquest by Rome of the Hellenic world. Readings and examinations on required texts. Special attention is given to the following topics: geographical features; the religion of the people.; the growth of city and state; Sparta and the Peloponnesian League; Athens,—the forces that led from monarchy to Democracy; the time of Pericles; Macedon; the Empire of Alexander; literature and art; the Hellenistic Period. A study is made of the political and social forces that led to the supremacy of Roman ideas, thus making course Ia a preparation for the history of Ancient Rome in Course Ib.

[Four hours a week for one term.]

(b) **Ancient Rome** to the Barbarian Invasions. Readings and examinations on required texts. The treatment of this course is similar to that followed in Ia. Particular emphasis is placed on the social and political life of the Roman peopole, though due attention is given to the various military activities. The course involves a careful study of the Roman kings, the early Republic, the spread of Roman power, the Punic Wars, the changes that led to monarchy, the decline of the empire, the barbarian invasions, the beginnings of Christianity.

Class discussions and weekly reports form an important part of the work in courses Ia and Ib.

[Four hours a week for one term.]

MEDIEVAL AND MODERN HISTORY.

II.

(a) **The History of Western Europe from the Beginning of the Christian Era to 1648.** The conflict of Paganism and Christianity; the development of the Church's political power; the invasion of the Barbarians; Feudalism; the guild as a factor in town life; monasticism and the rise of the universities. A detailed study is made of the Renaissance, the Protestant Reformation, and the Catholic activities in the latter half of the sixteenth century, especially the work of the Council of Trent.

[Four hours a week for one term.]

(b) **The General History of Europe from the Close of the Thirty Years' War to the Present Time.** Attention is given to the rise and development of Modern European countries; the economic growth of Europe; the French Revolution and the Napoleonic Era; the Franco-Prussian war; causes and probable effects of the great European war; religious thought in present day Europe. The work closes with a comparative study of European governments.

[Four hours a week for one term.]

III.

(a) **The History of the British Isles from the Roman Invasion to the Present Time.** Britain before the introduction of Christianity; monastic life; England during the Crusades; the meaning of the Magna Charta; the jury system; the growth of parliament; commercial and military relations with the continent; town life; the Church of England; the Napoleonic wars; the industrial revolution; the growth of political parties. Regular reports by students on special topics are required.

[Three hours a week for two terms.]

(b) **Industrial History of England.** The purpose of this course is to outline the important phases of the industrial history of England as distinct from its social and political problems. Special attention is given to problems associated with early rural and town life; early labor legislation; currency problems; the practical workings of early economic theories; factory legislation; modern forms of business organization.

[Two hours a week for one term.]

IV.

(a) **American History from its Beginning to the Present Time.** A large part of the work in this course consists in the preparation of special topics by the students. No text book is used. An effort is made to train the student in the use of original sources, as well as in the discriminating use of secondary authorities. Weekly tests are given on the lectures and assigned readings. The following topics receive special attention: America before the time of Columbus; early discoveries and explorations; conflicting European claims; colonial institutions; the Church in the colonies; growth of industries; colonial wars; the revolutioary period;

the conflict over slavery; reconstruction; rise of political parties; the place of America in world politics.

[Three hours a week for two terms.]

(b) **Industrial History of America.** The treatment of this course is similar to that followed in Course IIIb. The history begins with the industrial life of the colonies during the time of British control. Other problems treated are: industrial conditions during the Revolution; Hamilton's report on manufactures; the growth of the tariff; internal improvements; economic phases of the Civil War; present-day problems.

History IIIb and IVb are given in conjunction with History IIIa and IVa respectively.

[Two hours a week for one term.]

(c) **American Church History from Its Beginning to the Present Time.** No text book is used. Weekly reports on assigned readings are required. Special attention is given to the work of the early missionaries; an examination of the various religious denominations in colonial times; religious tolerance before the Revolution; the colony of Maryland; Catholic leaders; the Know-Nothing Movement; Trusteeism; later anti-Catholic organizations; Catholic journalism; the Catholic educational system.

[One hour a week for two terms.]

IRISH HISTORY

V.

(a) **Irish History from the Earliest Colonists to the Present Time.** The purpose of the course is to acquaint the student with the true story of Ireland by presenting a statement of facts. Early Irish religious beliefs, customs, racial characteristics, systems of government are discussed, and specific topics are assigned for research.

(b) A course of lectures on the modern Celtic movement with a study of the modern Irish writers.

[Four hours a week for one term.]

POLISH HISTORY

VI.

History of the primitive Slavs. The Rise of the Polish Nation. The Epoch of the Piast-Dynasty (962–1386).

The Jagiellonian Epoch (1386–1572).

Poland during the rule of the Elector Kings (1572–1795).

Poland in its Partitions. From 1795 to the present time. Polish Emigration.

No particular text-book is used in this course. It is a lecture-course; and the student is required to consult the principal authors to supplement the notes gathered from the lectures in class.

GENERAL HISTORY

VII.

A General Course in Mediæval and Modern History with special reference to the most important periods. This course is especially designed for students in the colleges of Law, Science, and Engineering.

[Five hours a week for one term.]

JOURNALISM

I.

A brief survey of the field; metropolitan and small city dailies, country weeklies, class and trade papers; magazines; also a general study of the nature, gathering, reporting and writing of news; interviews; dramatic and other criticism; editorial writing; head writing and make up; organization of a newspaper staff.

[Four hours a week for two terms.]

II.

A detailed study of news and its handling, news values, classes of news, newspaper style, forms of news stories, interviews, criticism, feature and special articles, with copious practice in actual assignments and in correspondence; verification of principles by study of fifty daily newspapers.

[Four hours a week for two terms.]

III.

Newspaper fields and newspaper properties; equipment; source of income; developing subscription and advertising patronage; advertising rates; self advertising; co-operation of editorial department; sources of expense; newspaper accounting.

Psychology of advertising; advertising mediums; relation of advertising to distribution and price; its social influence; good and bad copy; trade marks; elements in the advertising problem—the consumer, the commodity, the medium, competition, timeliness; publisher's responsibility for advertising, the ethical and the business view point.

[Four hours a week for two terms.]

IV.

Ethics of Journalism. Newspaper Policy; Comparative Journalism; Editorial Writing; Magazine Writing; Editing Copy; Rapid Writing; A Test Period of Reporting on a Daily Newspaper. Special treatment of the laws affecting publications, and of Constitutional and International Law will be given under Law IX.

[Four hours a week for two terms.]

LATIN

I.

Livy. Selections.

Vergil. Bucolics and Georgics.

Cicero. De Senectute and De Amicitia.

Prose Composition. *Scheier.*

[Five hours a week for two terms.]

II.

Cicero. De Oratore.

Horace. Odes and Satires.

Advanced Prose Composition. *Scheier.*

[Five hours a week for two terms.]

III.

Livy. Book I.

Horace. The Literary Epistles and the Ars Poetica.

Tacitus. Agricola and Germania.

Terence. One Play, *selected.*

Original Themes. (Two a month).

Seminar. Papers on the Authors and their Works. (Once a month).

[Four hours a week for two terms.]

IV.

Quintilian. De Institutione Oratoria, Books X. and XII.

Plautus. Captivi.

Cicero. De Officiis.

A Thesis. Subject assigned or selected with approval of the dean. About 2500 words in length.

[Four hours a week for two terms.]

Graduate Work in Latin. Advanced courses of instruction in the Latin language and literature will be provided for graduate students who are candidates for the degree of Master or Doctor. The work will be directed in the seminar and be devoted to a critical study of one particular author or group of authors.

The work of the seminar will be supplemented by lectures on comparative philology and comparative grammar.

MATHEMATICS

I.

Algebra. This course includes a study of the binomial theorem, the theory of logarithms, choice, chance, variables and limits, series, determinants. Then follows a thorough study of the general properties and solution of equations, embracing the subjects of derivatives, transformation, detached coefficients, surd and imaginary roots, incommensurable roots, limits of roots, biquadratic equations, Descartes' and Cardan's rules; Sturm's theorem, Horner's method.

[Five hours a week for one term.]

II.

Analytic Geometry. This course includes a study of the point and right line; conic sections; their equations and properties; discussion of the general equation of the second degree containing two variables; different systems of co-ordinates; transformation of co-ordinates; an elementary course in geometry of three dimensions, embracing the point, straight line, plane and surfaces of revolution; transformation of co-ordinates; quadric surfaces and supplementary propositions.

[Five hours a week for one term.]

III.

Calculus, Differential. This course includes a study of the methods for the differentiation of algebraic, logarithmic and exponential, trigonometric, and inverse trigonometric functions, successive differentiation, and differential coefficients; treatment of implicit and compound functions; expansion of functions; indeterminate forms; partial differential coefficients of the first order and of higher orders; direction of curvature; radius of curvature; envelopes; maxima and minima of functions of one independent variable, and of several independent variables; tracing curves; differentials of arcs, plane areas, surfaces and volumes of revolution.

[Five hours a week for one term.]

IV.

Calculus, Integral. Integration of elementary form and of rational fractions; integration by rationalization and by parts; successive integration; multiple integrals; definite integrals, limits of integration; double integration applied to plane areas; rectification of plane curves; quadratures of plane areas and surfaces of revolution; surface and volume of any solid; intrinsic equation of curve. This course is supplemented by numerous exercises and examples.

[Four hours a week for one term.]

V.

Differential Equations. An elementary course for Engineering students, supplementary to the course of integral calculus. It embraces equations of the first order and degree; equations of the first order, but not of the first degree; singular solutions; linear equations with constant coefficients; special forms of equations with higher orders. Numerous applications to mechanics and physics are introduced during the course.

[One hour a week for one term.]

Advanced Work. The prescribed courses in pure mathematics are I. and V. inclusive. Advanced courses, based on standard authors, are offered in: Higher Algebra, Trigonometry, Determinates, Theory of Equations, Calculus, Analytic Geometry, Analytic Geometry of three Dimensions, Quaternions. The text-books are not necessarily the same every year. The number of students required to constitute a class in any one subject must be at least five.

MECHANICAL ENGINEERING

I.

Thermodynamics. The subject begins with a theoretical study of the steam engine, gas engine, steam turbines and other heat motors involving the laws of thermodynamics of gases, saturated vapors and superheated steam. The applications of this preliminary work are then dwelt upon, and prime movers, the injector, condenser, refrigerating machinery, boilers and pumps are studied in detail. During the second term a study of the different types of internal combustion engines is made together with a general study of costs in operating power plants. Frequent reference is made to trade catalogues, of which an abundant supply should be obtained by the student.

[Four hours a week for two terms.]

II.

Materials of Engineering. This course, supplemented by shop work and laboratory work in testing materials of construction, is designed for the purpose of acquainting the student with the properties of the material he will use in his profession. Tensile and shearing strength, elasticity and resistance are studied, together with the effects of strain, intermittent loading and impact. The process of manufacture of the most important materials is taken up, and estimates of the cost of construction at market prices complete the work.

[Two hours a week for one term.]

III.

Steam Power Plants. The preliminary work of this course comprehends a brief study of the history of the steam engine together with its development and differentiation into the standard types at present on the market. Subsequently, the elements controlling designs for specific purposes are considered. Finally the study of the Power Plant as a whole is taken up and the relations between engines, turbines, pumps, condenser, boilers, piping, fuel and auxiliaries are dwelt upon in detail. A completely worked out plan for a specific equipment is required of each student.

[Five hours a week for two terms.]

IV.

Steam Boilers. This subject is treated much as that of Course III. The determination of sizes of parts from consideration of strains, thickness of shells, size of rivets, braces, furnaces and proper methods of connection of boilers, with efficiency of furnaces and life of boiler are some of the subjects considered. The method of determining the efficiency of fuels, heating surfaces, heights of chimneys, boiler setting and materials used in connection are also discussed.

[Three hours a week for one term.]

V.

Kinematics. This course treats of the geometry of machinery, the determination of the paths of the various parts of an elementary combination and the constraining of the parts to move in these paths. The general theory is then applied to cams and gear teeth, the relative motion of machine parts and the kinematic trains, belts, pulleys, speed cones, link work and other aggregate combinations.

[Two hours' recitation and two hours' drawing
a week for one term.]

VI.

(a) **Machine Design.** This work involves a study of the form and strength of machine parts as applied in designing, with computation of dimensions for fastenings, bearings, rotating pieces, belt and tooth gearing, etc. The derivation of rational formulae and the determination of empirical formulae are included and applied in designing.

[Two hours a week for one term.]

(b) **Elements of Steam Engineering.** A brief introductory course, including a descriptive study of the chief elements comprised in the modern power plant, steam boilers, pumps, feed water heaters, steam engines, turbines, condensers and heating systems. Drawing-board work on valve gears, tangential force diagrams, governors, flywheels and mechanics of the steam engine.

[One hour a week for one term.]

VII.

Gas Power Plants. A study from text-book, reference works, current technical magazines and catalogues of manufacturers of the adaptation of the various types of prime movers available as power sources. From a set of specifications for a given power plant submitted to the student, a detailed plan is required, showing the selection and arrangement of the power units, method of piping, arrangement of fuel handling apparatus and other auxiliaries.

Must be preceded by Course X. and taken in conjunction with Course XI.

[Three hours a week for one term.]

VIII.

Mechanical Laboratory. The work taken up includes a study of the methods of testing the steam engine under varying running conditions, valve setting, calibration of thermometers, gauges and indicator springs, use of Prony brake, Weber and Emerson dynamometers, Pelton water wheel, Weir calibration, etc.

[Five consecutive hours a week for one term.]

IX.

Steam Engines and Boilers. A brief course in the study of boilers and steam engines designed to familiarize the student with the different types in use and their respective merits. Only that theory is taken up which is necessary to the working out of problems, the ultimate object of the course.

Students taking this course must provide themselves with an abundant supply of trade catalogues.

[Three hours a week for one term.]

X.

Gas and Vapor Engines. This course, extending over two terms, is given to a general descriptive study of all the types of gas engines and explosive motors. The general construction of gas, oil, vapor engines is studied together with their adaptations to various uses.

Results due to change in ignition, compression and variation of working fluid; methods of speed regulation and government and the details of auxiliaries as pumps, carburetors, hot tubes, batteries, spark coils and dynamos are dwelt upon.

[Five hours a week for two terms.]

XI.

Gas Engine Design. A complete study of the thermodynamics and design of the gas engine, by text-book, lectures and drawing board. The major subjects taken up are power, efficiency, economy, forces due to gas pressure and inertia and dimensions of engine parts.

[Five hours of recitation and ten hours of drawing
a week for two terms.]

XII.

Gas Engine Construction. The complete working up from rough castings and forgings of a small type of gas engine. This is part of the thesis work for students in the Short Program and requires the complete machining and assembling of the engine and must be preceded by Courses X. and XI.

[Three hours a week for two terms.]

XIII.

Gas Engine Laboratory. Indicator practice, commercial efficiency, governing economy, speed regulation. Experiments in ignition, spark coil construction, carburetors and vaporizers. Test of engine constructed by the student.

[Two afternoons each week for two terms.]

SHOP WORK

XIV.

(a) **Woodwork.** Exercises in planing, splicing, framing, scroll sawing and turning.

(b) **Application of Carpentry** to pattern making, cores, etc., including parts of machines, pipe joints, cranks and bearings.

(c) **Foundry Practice.** Setting up and drawing simple and complicated patterns. Lectures on heating and pouring metals for different purposes. Core making.

(d) **Iron Forging,** welding, annealing, shaping, tool making, tempering and case hardening.

(e) **Benchwork** in iron, including surface chipping, key setting, draw filing, scraping and polishing.

(f) **Accurate Work** on the lathe, planer, shafting and milling machines. Construction of machine tools, reamers, taps, twist drills, gear wheels and complete machines.

[Each section three hours a week for one term.]

Thesis. Each candidate for a degree in Mechanical Engineering must present for graduation a thesis of considerable magnitude which will exhibit his knowledge of the courses he has followed. It may embrace designing, experimental investigation or original research, in a subject selected by the student and approved by the professor. The major part of the second term, Senior year, is devoted to this work, and graduation is conditional upon the knowledge of mechanical engineering displayed in its preparation.

METALLURGY.

I.

Metallurgy. Among the subjects studied in this course are the following—classification of ores, sampling, crushing, milling practice, roasting, smelting and cyanidation, the various extraction processes of the following metals—gold, silver, copper, lead and zinc, are given special attention; the production of pig iron in blast furnaces.

A trip of inspection is made to smelting plants, blast furnaces and mills (stamps and rolls) in order to familiarize the student with metallurgic plants in operation. [Three hours a week for one term.]

II.

Assaying. Chiefly laboratory work. Furnace assaying of the ores of gold, silver and lead.

[Two laboratory hours a week for one term.]

III.

Assaying. This course consists of a series of actual determinations of the quantity and value of gold, silver and lead in the various ores by the crucible and scorification methods of the fire assay; the assaying of gold and silver bullion; determining the strength of cyanide working solutions; the assay of gold bearing cyanide solutions; and wet determinations of iron, copper and zinc.

[Eight hours a week for one term.]

IV.

Ore Dressing. A course in which a detailed study is pursued of the various processes of mechanically separating and saving valuable minerals from the valueless gangue of ores, whereby the valuable minerals are concentrated into smaller bulk and weight by discarding a large portion of the waste.

The principal subjects treated are: Preliminary and final crushing by means of rock-breakers, steam and gravity stamps with amalgamation; rolls, Chilian, Huntington; tube and ball mills; screen sizing and classifying; sand and slime concentrating on jigs, tables and vanners; magnetic separation, pneumatic concentration, oil flotation processes; locating and constructing the mill. The course includes a trip of inspection to a number of the most modern concentrating mills in the Ontario district where the student engages in practical work in the study of mill construction, operation and efficiency.

[Three hours a week for one term.]

MINING ENGINEERING

I.

Principles of Mining Engineering. This course includes a general study of Mining operations divided into the following subjects: Occurrence of minerals in the earth's crust, discovery, boring, excavation, supporting excavations, exploitation, haulage, hoisting, drainage, ventilation, lighting, access, ore dressing and treatment. [Five hours a week for two terms.]

II.

Mine Surveying. A study of the subject of surveying in its special application to mines, through lectures, plotting of problems and recitations; for students who take the summer course in the mines. The following subjects receive particular attention—recording of notes in underground traverses and their subsequent plotting, a comparison of metal mine and coal mine surveys, the methods of connecting surface with underground surveys by means of both the auxiliary telescope and plumb lines and the deputy mineral surveyor's methods of surveying mining claims for patent. Each student is required to make a complete mine map from notes of actual mine surveys.

[Three hours a week for one term.]

MICROSCOPY

I.

Microscopy. Lectures and laboratory work. Refraction and dispersion of light and illumination. The index of refraction in different media. Different shapes of lenses. Spherical and chromatic aberration. The selection and care of a good microscope. The use of accessories for advanced work; immersion and adjustable objectives, camera lucida, sub-stage condenser, polarizer, micrometers, etc. Special work in photomicrography. This course is given in connection with Bacteriology.

II.

Micro-Chemistry Laboratory work. The preparation of micro-chemical reagents and their application in testing, fixing, hardening, staining, cleaning and mounting tissues and organs.

[One laboratory hour a week for one term.]

MUSIC

FIRST YEAR

I.

Violin. Studies by Wichtl, Ries, Mazas, Kreutzer Fiorillo. Compositions by Dancla, DeBeriot, Sitt.

II.

Pianoforte. Koehler's and Damm's *Piano School.* Studies by Loeschorn, Berens, Czerny, Heller, Sonatinas and easy sonatas by Clementi, Haydn, Reinecke and Mozart. *Jugend Album* and *Kinderscenen* by Schumann.

III.

Voice Production. Tone placing. Diaphragmatic breathing-control. Articulation. Text-book, Shakespeare's *Art of Singing, Part I.;* Kofler's *Art of Breathing; Studies by Bassini,* English songs.

Vocal Sight Reading. Elementary theory of Music. Intervals and ear-training. Choir practice.

IV.

Organ. Rink Organ School. Eugene Thayer Studies, *Light Preludes and Fugues* by Bach.

SECOND YEAR

Ia.

Violin. Studies by Rode, Schradieck, Dont. Sonatas, and pieces by Tartini, Bach, Beethoven, Mozart.

IIa.

Pianoforte. Studies by Czerny, Heller, Hasert, Lecouppy, Cramer, Krause. Octave studies by Turner. Bach's preludes, fugues and inventions. Sonatas and pieces by Mozart, Haydn, Beethoven, Mendelsohn, Schumann, Schubert.

IIa.

Voice Production. Advanced breathing exercises. Study of the chest and falsetto registers. Stroke of the glottis. Text-books, Sheakespeare's *Art of Singing, Parts II. and III.* Studies from Italian operas; French and English songs.

Vocal Sight Reading. Phrasing, punctuation and advanced study. Practice in operatic chorus-work.

IVa.

Organ. Schneider-Warren Pedal Studies. Easy sonatas by Mendelsohn, Merkel, Rheinberger. Preludes, fugues by Bach. *Twenty Studies* by Whiting. *Canonic Studies* by Chadwick.

Va.

Harmony. Construction and use of chords. Harmonizing from figured bass. Text-books, Goetshius *Tone Relations;* Logier's *Harmony.*

THIRD YEAR

Ib.

Violin. Sonatas by Bach. Studies by Schradieck-Alward, Wieniawski. Concertos and pieces by Sphor, Vieuxtemps, Mendelsohn, Dvorak.

IIb.

Pianoforte. *Gradus ad Parnassum.* Clementi-Tausig, *Das Wohl Temperirte Klavier* by Bach. *English and French Suites* by Bach. *Etudes* by Harberbier and Henselt. Sonatas, concertos and pieces by Beethoven, Weber, Mendelsohn, Chopin, Schubert and Grieg.

IIIb.

Voice Production. Study of trill, mordent, gruppetto, etc. *Messa de Voce.*

IVb.

Organ. Sonatas, preludes and *Chorale Vorspiele* by Bach. Concert pieces by Handel, Merkel, Salome, Whistling, Best, Rheinberger.

Vb.

Harmony. Counterpoint. Simple two and four part counterpart; double and florid counterpart. Canon, fugue.

FOURTH YEAR

Ic.

Violin. Studies by Paganini. Concertos and pieces by Beethoven, Brahms, Burch, Joachim and others.

IIc.

Pianoforte. Studies by Tausig and Chopin. Sonatas, concertos and concert pieces by Schumann, Brahms, Rubinstein, Liszt.

IIIc.

Organ. The greater preludes, fantasies and fugues of Bach. Sonatas and concert pieces by Thiele, Widor, Dubois, Builment and Saint-Saens.

IVc.

Harmony. Composition. Construction of musical forms, *i. e.*, the sonata, rondo, etc. Practical application in an original manner of these forms. Orchestration.

ORCHESTRAL INSTRUMENTS.

Instruction is also given on the viola, flute, piccolo, cornet, trombone, guitar and mandolin.

Opportunity is given to the advanced students of playing in the University Orchestra and the University Band.

GLEE CLUB.

A voluntary organization of students open to all interested in singing. In addition to the training for choral and solo work there are regular lectures on the theory of music. The Glee Club gives concerts in the local auditorium and in many near-by places.

PHARMACY

I.

Elements of Pharmacy—Lectures and recitations on the art and science of pharmacy, and demonstrations of the various pharmaceutical processes.

[Three hours a week for two terms.]

II.

Galenical Pharmacy. A laboratory course to accompany Course I. This course consists of the practical application of the pharmaceutical processes to the manufacture of official preparations of the United States Pharmacopoeia and of unofficial and N. F. preparations.

[Five hours a week for one term.]

III.

Inorganic Pharmacy. Laboratory, demonstrations and recitations. A thorough course in the preparation and testing of pharmaceutical and technical chemicals.

[Five hours a week for one term.]

IV.

General Pharmacy. A systematic classification of organic and inorganic drugs and preparations from a pharmaceutical standpoint followed by a close study of each of the classes.

[Two hours a week for two terms.]

V.

Magistral Pharmacy. Includes the manifold methods of extemporaneous pharmacy with consideration of incompatibility, posology, and the principles of elegant pharmacy. Dispensing and prescription practice.

[Three hours a week for one term.]

VI.

(a) **Pharmaceutical Chemistry.** Chiefly assaying, testing and manufacturing. Determination of melting and boiling points, and solubilities. Some attention is given also to toilet and commercial preparations with a view to the invention and development of original formulas.

[Five hours a week for one term.]

(b) **Pharmaceutical Chemistry.** Assaying and manufacturing.

[Six hours a week for one term.]

VII.

General Pharmacy. Pharmaceutical analysis and assaying, micro-chemical, polariscopic and spectroscopic estimations, food analysis. Incompatibilities and methods of manufacture. Alkaloids and other active principles.

[Five hours a week for one term.]

(a) **Mater Medica.** An elementary course in the general principles of the subject, covering the work outlined in the Syllabus.

[One hour a week for one term.]

VIII.

Materia Medica. This work embraces a detailed consideration of botanical drugs, their pharmaceutical definition and description, constituents, habitat, therapeutic action, use, dose and antidote. Attention is given also to mineral drugs and those of animal origin. They are studied individually at first, then in classes or groups. The grouping is so arranged as to make the subject comparatively easy for the student.

[Two hours a week for two terms.]

IX.

Pharmaceutical Arithmetic. This work includes a study of weights and measures, percentage, relationship of systems, reducing and enlarging formulas, alligation and chemical problems.

[Three hours a week for one term.]

X

Pharmacognosy. The indentification of preparations and crude drugs by their physical properties with special reference to quality and detection of adulteration. Attention is also given to the methods of preventing loss by improper storage or by the ravages of insects. Important drugs are studied under the microscope in cross section and in powder form.

[One hour a week for two terms.]

XI.

Commercial Pharmacy. A brief course in business methods, store-management, banking, accounting, and pharmacy.

[One hour a week for one term.]

XII.

Pharmaceutical Jurisprudence. A series of about ten lectures on Pharmaceutical Jurisprudence and Commercial Law.

XIII.

Pharmaceutical Latin. A brief course in the essentials of Latin with special reference to prescription reading and pharmaceutical nomenclature.

[Two hours a week for one term.]

THESIS.

During the third year the student is required to spend at least two hours a week in original research on a subject within the domain of Pharmacy. The results of this work are carefully recorded and must be typewritten and presented to the Faculty as a requirement for graduation.

PHILOSOPHY.

I.

(a) **Physiological Psychology.** This course is a fairly comprehensive treatment of the physical basis of consciousness. Experimental and Descriptive Psychology. The primary laws of consciousness; psychophysical methods and results.

[Four hours a week for one term.]

(b) **Laboratory Exercises.** Experiments will be conducted with special reference to their value as aids to introspection.

[One hour a week for two terms.]

II.

(a) **Elements of Epistemology.** A study of the Scholastic theory of knowledge in relation to the teachings of Descartes, Leibnitz, Locke, Berkeley, Hume, Kant and Spencer.

(b) **Logic.** Text-book and lectures.

[Four hours a week for one term.]

III.

General Metaphysics. Transcendental concepts: their value in different systems of philosophy.

[Four hours a week for one term.]

IV.

Cosmology. The fundamental concepts of natural science in relation to Thomistic philosophy.

[Four hours a week for one quarter.]

V.

Theodicy. The existence of God; His attributes. His presence in the universe.

[Four hours a week for one quarter.]

VI.

Rational Psychology. The problems of the mind. Nature, origin and destiny of the soul. The nature and freedom of the will.

[Five hours a week for one quarter.]

VII.

Ethics. A thorough study of the general principles underlying Ethics. Present day problems will be discussed in the light of these principles. A brief presentation of Sociology and Socialism will be given. The instruction will be by text-book, lectures and considerable collateral reading.

[Five hours a week for three quarters.]

VIII.

The History of Philosophy. This course is intended to give the student in consecutive form the principal systems and philosophers in the Ancient, Mediæval and Modern periods. It will likewise serve as a review of the subjects treated in the general course of Philosophy. Philosophic Movements of the present day and writers of note in present philosophic thought will be discussed.

[Two hours a week for two terms.]

IX.

This course is for students following the Law. Its purpose is to give them a thorough training in correct thinking and to acquaint them with the problems of ethics in general and in particular to note the bearings of ethical principles in the Law. Sociology and Socialism are briefly presented.

(a) **Logic.** Text-book, lectures and readings.
[Four hours a week for one term.]

(b) **Ethics.** Text-book, lectures and readings.
[Four hours a week for one term.]

X.

Philosophy, Brief Course. A general course designed to acquaint the student with the important problems of philosophy. It is hoped sufficient interest will be aroused in the student in this abridged presentation to enable him to continue, of his own accord, an intelligent study of this important subject. For Engineering and Science students.

[Four hours a week for two terms.]

XI.

Scholastic Philosophy. This is a two year course in Scholastic philosophy based on regular Scholastic manuals—"Reinstadler's Elementa Philosophiae Scholasticae" is used at the present time. This course is given primarily for students who intend to enter the priesthood.

The following studies are given in one year: Logica, Criteriologia, Ontologia, Cosmologia, the studies of the other year: Anthropologia, Theodicea, and Ethica.

This course is preceded by Philosophy I and II, thus Logica and the first part of Anthopologia are gone over rapidly. The subjects are taught five periods a week. Ontologia and Ethica are each given one term; Logica and Criteriologia, Cosmologia and Theodicea, each one quarter. The History of Philosophy runs parallel with the subjects treated. There is considerable collateral reading demanded.

Student Discussions. From time to time throughout the year students will be required to read and discuss papers on various subjects in the field of philosophic inquiry.

Graduate Work in Philosophy. Graduate work in the department of philosophy, leading to the degree of Master or Doctor, may be undertaken by students who have pursued the course described above. Candidates who have made undergraduate studies elsewhere must give evidence of ability to begin specializing at once. In the first and second years, research work will be conducted in the seminar and the psychological laboratory. Students will have the benefit of frequent consultation with the professors.

PHYSICS

I.

(a) **Physics.** Instruction in Physics is given by lectures and recitations in which the general laws of mechanics, heat, acoustics. optics, electricity and magnetism are presented. The course is intended to meet the needs of those who desire a general knowledge of the subjects, as well as to lay the foundations for advanced work. Particular attention is paid to the correct statement of principles, so that in his advanced work the student will have nothing to unlearn or relearn. Text-book, *Carhart and Chute.*

[Three hours a week for two terms.]

(b) **The Laboratory Work** of this course consists of a series of experiments which verify and apply practically the fundamental principles of physics. The student also receives instruction in the use and careful handling of apparatus, accurate observation, and correct deduction of results. Neat and concise reports of all experiments are kept by each student and form the basis for the grades in his work.

[Two hours a week for two terms.]

II.

(a) **General Physics.** This course consists of lectures, recitations and class room experiments on the fundamental principles and properties of matter, fundamental units of measurements, dimensional formulas, physical units, time relations, vector and scalars, sound, origin and propagation, nature of sound, velocity of sound, sound waves, musical scales, light, geometrical optics, reflection, refraction, prisms, lenses, dispersion, physical optics, velocity of light, interference, diffraction, polarization, color; to be given in the first quarter and to be followed by:

(b) A detailed study of mechanics of solids, motion, work, energy, mechanics of a rigid body, elasticity, mechanics of fluids, fluids in motion, molecular mechanics, surface tension, solution and diffusion, supplemented with special notes and the solution of numerical problems. This is followed by:

(c) Heat, to be given in the first quarter of the second term, the course comprising a detailed study of the nature of heat thermometry, expansion, influence of temperatures upon the pressure of a gas, calorimetry, mechanical theory of heat, heat and mechanical energy, fusion, vaporization, hygrometry, liquifaction of gases, conduction, convection. Magnetism, action at distance, theory, ether strain theory, magnetic field supplemented with special notes and the solution of numerical problems This is followed by:

(d) Electrodynamics and Electrostatics in the last quarter of the second term comprising the study of the fundamental electrical units, Ohms Law, electrolysis, electric cells, thermo-electricity, heating effect of currents, electrical condenser, electromagnetics, induction, dynamo electric machines, electrostatic field, electrostatic capacity and lectures on the electron theory, conduction through gases, radioactivity and electric waves, supplemented with special notes and solution of problems.

[Five hours a week for two terms.]

III.

(a) **Laboratory.** The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, heat, light, sound, electricity and magnetism. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

(b) **Laboratory.** For Mechanical and Electrical Engineering students. The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, light and sound. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

IV.

A course for the students of the College of Science. This course is the same for the first quarter as Part A of Course II, and is followed by a detailed study of mechanics, heat, and electricity. This course can be taken by students who have not had the higher mathematics, a working knowledge of Trigonometry is presupposed. Special emphasis is given to the correct statement of fundamental principles and definitions. The course is largely supplemented by laboratory exercises.

[Four hours a week for two terms.]

V.

Physical Laboratory. Students in Electrical and Mechanical Engineering will have a special set of experiments on electricity, comprising special advanced work in heat, magnetism, general electricity, galvanometry, electrical quantity, induction, the magnetic properties of iron. Accuracy in observation and in the calculation and recording of the results is required. This course must be preceded by Courses II. and IIIa.

(a) **Electrical Measurements**. Laboratory practice with galvanometers, voltmeters, ammeters and wattmeters, resistance work, the relation or equivalence between electric energy and heat, capacity and inducance, insulation tests.

[One laboratory hour a week for one term.]

(b) **Calorimetry.** Accurate work in laboratory, using methods of mixtures, bomb and other calorimeters in measuring the calorific values of gaseous and solid fuels, quantitative measurements of radiation and conduction of heat as applied to pipe coverings, etc.

[One laboratory hour a week for one term.]

VI.

Meteorology. A government station was installed at the University by the United States Weather Bureau in March, 1912. An elementary course in meteorology is offered to students.

[One hour a week for one term.]

Research Work. Courses are offered in the Theory of Heat, Theory of Electricity and Magnetism, Optics, the Constitution of Matter, Conduction of Electricity by Gases, Theory of Sound, Hertzian Waves. Calculus is required to take up any of these topics.

PHYSIOLOGY

I.

(a) This course comprises lectures, recitations and demonstrations based upon some standard text-book of Human Physiology. A liberal supply of models, charts and manikins are at hand to facilitate all demonstrations required.

(b) Laboratory work consisting of a selected number of experiments so arranged as to give the student a fair insight into modern experimental physiology.

(c) A limited number of microscopical preparations are required to be made by each student, and he must examine a set of typical preparations in order to acquire a fair knowledge of the microscopical structure of the tissues and organs of the human body.

(d) During the course special lectures will be given upon personal, domestic and municipal hygiene.

[Four recitations and one laboratory period
for one term.]

N. B.—Students of Pharmacy must take sections (a) and (d) and may select either (b) or (c).

II.

(a) This course comprises a complete study of human physiology such as is required of students of medicine. The lectures, recitations and demonstrations are based upon standard advanced text-books.

(b) Laboratory work in experimental physiology A standard manual is used and the student will have free access to a number of other similar works.

[Four recitation hours and two laboratory
periods for two terms.]

POLITICAL SCIENCE

I.

The Principles of Economics. A general survey of the whole field of Economics.

[Four hours a week for two terms.]

II.

The History of Economic Thought. A brief resume of the economic ideas of the Greeks and Romans; the influence of Christianity on economic doctrines; a brief treatment of the economists immediately preceding Adam Smith; schools of economic thought in the nineteenth century; the Classical, the Historical, the Aristuans, the Socialists, contemporary economic thought in the United States.

[Three hours a week for one term.]

III.

Money, Credit, and Banking. This course considers the principles of money, the development of the currency and banking systems of the United States giving special attention to the principles and the operation of the Federal Reserve Act.

[Four hours a week for one term.]

IV.

Public Finance. This course includes a classification of public expenditure, the industrial functions of the state, problems of American taxation with special attention to the need and methods of budgetary reform.
[Four hours a week for one term.]

V.

Distribution of Wealth. Modern theories of rent, wages, interest and profits; a study of Catholic teaching on wages as enunciated by Leo XIII. "On the Condition of the Working Classes" and in Ryan's "Living Wage." [Four hours a week for one term.]

VI.

The Principles of Economics. A brief course covering the whole field of Economics, designed for students of Law, Engineering and Science.
[Five hours a week for one term.]

VII.

The Elements of Transportation. A discussion of steam railroad, electric railway, ocean and inland water transportation. [Two hours a week for one term.]

VIII.

Industrial Organization and Combination. A general survey of the development of the principal forms of business organization; the single entrepeneur system, the partnership, the joint stock company, the corporation; social and private advantages and disadvantages of each form. Causes leading to the rise and development of the trusts; the various forms of combination; an examination of the remedies proposed for the solution of the problem.
[Four hours a week for one term.]

IX.

Law. This course is intended primarily for students of Journalism and Commerce. It deals briefly with contracts, negotiable instruments, sales, agency, partnership, property, corporations, bailments and carriers, suretyship and guaranty. It is an elementary course in law dealing particularly with those subjects that are more closely related to business and business administration. The students of Journalism will have special opportunity to acquaint themselves with the law of libel, the federal publicity law and likewise to become familiar with the principles of constitutional law and international law.

[Four hours a week for one term.]

X.

Corporation Finance. A study of the corporation as a form of business organization, the organization of a business, the work of promoter and underwriter, the various kinds of securities, bases of capitalization, receiverships and reorganization.

[Four hours a week for one term.]

XI.

Labor Problems. Woman and child labor, the sweating system, immigration, poverty and unemployment, the labor union movement, methods of industrial peace and labor legislation are among the subjects studied.

[Four hours a week for one term.]

XII.

Socialism and Social Reform. This course treats socialism as a body of theory, a world-wide revolutionary movement, and as a proposed social re-organization; what is its essence, what are its affinities. A practicable program of social reform is worked out, and the inter-relations of Social Reform and Socialism considered.

[Four hours a week for one term.]

POLITICS

I.

The Principles of Politics. This course treats of the origin, nature, functions and sanctions of the state, the various forms of government, and the relation between liberty and authority.

II.

American Government and Politics. Text, lectures, assigned topics.

[Four hours a week for one term.]

III.

American City Government. A study of the American city, its government and some of its problems and methods.

[Two hours a week for one term.]

IV.

Political Parties and Political Problems. This course considers the characteristics, definition and functions of a political party; government by party; party platforms; party machinery, its uses and abuses; public opinion and popular government, and such devices as the initiative, referendum, recall and direct primaries.

[Two hours a week for one term.]

V.

Governments of Europe. This course takes up a comparative study of the constitutions of some of the most important European states, Great Britain, Germany, France, Italy, Switzerland, and Austria-Hungary. [Two hours a week for one term.]

VI.

Jurisprudence. A course covering (a) the outlines of the Science of Law. (b) The elements of International Law. (c) Lectures on selected topics of Roman and Canon Law. Lectures, readings, and examinations on required texts. [Two hours a week for one term.]

XIII.

Life Insurance. General principles of insurance; their development and application to modern business; organization forms, and technique of life insurance; a critical survey of the various kinds of obligations. Analysis of premium computation, the reserve, loading, surrender values, loans and surplus.

Property Insurance. Theory of risk and application to modern business; organization, forms, and technique, of fire, marine, fidelity, Surety, Title and Credit Insurance. [Three hours a week for one term.]

XIV.

Commercial Geography. A study of land forms; climate and its economic influences; economic and political geography of the far East; manufacturing industries of the United States; industrial management. A study of cost factors and manufacturing policy, etc. [Two hours a week for one term.]

SOCIOLOGY

I.

(a) **Outlines of Elementary Sociology.** Social forces; the individual and society; individual and societal aspect of rights, natural and acquired.

(b) **The Family.** Its organization and life; effects of economic and social changes upon the family and the home; disorganization of the modern family through divorce and race suicide; the subnormal family and its rehabilitation.

[Four hours a week for one term.]

II.

(a) **Social Pathology.** Nature, extent, types, causes of poverty, pauperism, remedial measures; crime, some sociological aspects of crimes, purpose of punishment, preventive measures, the mental and moral delinquent, psychopathic tests and treatments.

(b) Ideals and attainments of organized charities and corrections.

[Four hours a week for one term.]

III.

(a) **Social Ethics.** Traditional and social ethics examined in relation to modern social questions; the ethical content of social legislation.

(b) **Field Work in Sociology.** Personal investigation and work through social agencies.

[Four hours a week for one term.]

IV.

Immigration. Causes and character; effects of immigration on standards of living and national development; present day immigration problems; immigrants in industries; immigrants in the schools; immigration and crime; immigration and poverty; immigration laws.

[Four hours a week for one term.]

Graduate Work. Advanced courses in economics, politics and sociology are provided for graduate students who wish to receive the degree of Master or Doctor.

ACCOUNTING

[Students in Accounting will have an opportunity to take up work in typewriting, phonography, commercial arithmetic and all elementary commercial subjects.]

I.

Elementary Accounting. The principles underlying accounting in its simplest forms as connected with bookkeeping and as a development of the same.
[Four hours a week for one term.]

II.

Intermediate Accounting. Continuation of Course I.
[Four hours a week for one term.]

III.

Advanced Accounting. The theory of accounting and auditing. Subject of general accounting completed.
[Four hours a week for one term.]

IV.

Special Forms of Accounting. Corporation; cost accounting; institutional accounting; special problems.
[Four hours a week for one term.]

POLISH

I.

Polish Language and Literature. Grammar (*Matecki's Part I.*) Etymology. Exercises in spelling and reading.

Grammar, *Part II.* Syntax. Exercises in Composition. Short essays.

II.

Rhetoric. (*Galle's Text-book*). Study of Essays in Models. (*Krasnowilski's Handbook.*)

III.

Literature. *The History of Polish Literature. Part I.* From the beginning to the era of Adam Mickiewicz. (*Handbook: Tarnowski-Prochnicki*).

IV.

Literature. *The History of Polish Literature. Part II.* From Adam Mickiewicz to the present time. (*Handbook: Tarnowski-Prochnicki*). Essays.

ROMANCE LANGUAGES

These courses include the study of French, Spanish, Italian, Portuguese, Old French, Provençal.

The principal aim is to impart an accurate reading knowledge of literary works written in these languages. In the study, however, of Old French and Provençal, special attention will be paid to philology.

FRENCH

I.

Grammar with written and oral exercises from English into French, and from French into English, including the essentials of French syntax and the common idiomatic phrases. Reading of selections in the grammar and also of three of the following works: "La Jeune Sibérienne," "Le Lépreux de la Cité d'Aoste," "Les Prisonniers du Caucase," Xavier de Maistre; "La Main Malheureuse," Guerber; "Contes choisis de Bazin;" "La Belle Nivernaise," Daudet.

[Five hours a week for two terms.]

II.

Review of the grammar with study of the syntax, the irregular verbs and the idioms, memorizing, dictations and conversation on practical topics and careful reading of five of the following works: "Colomba," Mérimée; one play of each of the three dramatists, Corneille, Racine and Molière. "Atala," "René," "Le Dernier Abencérage," Chateaubriand; Poèmes, Hugo.

[Five hours a week for two terms.]

III.

The study of this course is devoted chiefly to the prose and poetry of the nineteenth century, and includes essays on literary subjects, conversation. History of the French language and general view of the literature with special study in the development of the drama. The works read are: "Hernani," Hugo; "Le Voyage de Mr. Perichon," Labiche and Martin; "Mademoiselle de la Ségliere," Sandeau; "Méditations de Lamartine," "Causeries du Lundi," Ste. Beuve; "François Le Champi," Sand; one novel from Bazin or Bourget "Poesies Choisies de Coppée."

[Four hours a week for two terms.]

N. B.—The works studied are not necessarily the same every year.

SPANISH

I.

General outlines of grammar with composition. Translation of easy tales from *Trueba, Fernon Caballero Perez Escritch*, etc., with select fables of *Samaniego*, and *Irate.*

[Five hours a week for two terms.]

II.

Spanish prose and poetry of the eighteenth and nineteenth centuries, with composition and the history of the literature of the period.

[Five hours a week for two terms.]

III.

Literature of the sixteenth and seventeenth centuries; *Cervantes, Calderon, Lope de Vega.* History of the literature of the period, with essays in Spanish.

[Four hours a week for two terms.]

IV.

Early Spanish. *El Poema del Cid.* History of the literature of the fifteenth century.

ITALIAN

I.

A study of the grammar. Simple readings.

[Five hours a week for two terms.]

II.

Grammar reviewed; readings; special attention to Dante's "Divina Commedia." Conversation in Italian.

PORTUGUESE

I.

General outlines of grammar with compositions. Readings: *Perfil do marquez de Pombal, Camillo Castello Branco; Novelhas Historicas, Pinheiro Chagas; Lendas e Narrativas, Herculano; Campo de flores, Joao de Deus.*

[Five hours a week for two terms.]

II.

Sermoes, Padre Antonio Vieira. Os Lusiadas, Camoens. History of Portuguese literature.

OLD FRENCH

Special attention will be paid to the laws underlying the formation of the French language from the popular Latin. It is from this point of view that the old French authors will be read, especially *La Chanson de Roland.*

PROVENCAL

Language and literature, with readings from the works of the Troubadours.

[Five hours a week for two terms.]

ZOOLOGY

I.

This course comprises:

(a) Lectures, recitations and demonstartions.

(b) Lectures, readings and recitations in Biology.

(c) Laboratory work on Invertebrata.

(d) Mammalian Osteology including the study of one or two types of skeletons belonging to each order of mammalia. The work is outlined in *Kirsch's Elementary Course in Mammalian Osteology.*

[Two recitation hours and three laboratory periods for first term; three recitation hours and three laboratory periods for the second term.]

II.

This course comprises:

(a) Recitations, lectures and demonstrations.

(b) Laboratory work upon some Invertebrate in order to complete and supplement the work under (c) in Course I.

(c) Dissection and laboratory work upon one or two types in each of the classes of Vertebrate, viz:. fish, frogs, newt, turtle, snake, mammal.

(d) A more extended study of mammalia with reference to the cat.

(e) An outline of comparative Embryology of animals.

[Six hours a week for two terms.]

Preparatory School

INSTRUCTORS IN THE PREPARATORY SCHOOL

REV. JOHN SCHEIER, C. S. C.,
Greek and Latin.

REV. MICHAEL QUINLAN, C. S. C.,
Mathematics and English.

REV. JOSEPH MAGUIRE, C. S. C.,
Chemistry.

REV. MICHAEL OSWALD, C. S. C.,
Latin and Greek.

REV. JULIUS NIEUWLAND, C. S. C.,
Science.

REV. CHARLES L. O'DONNELL, C. S. C.,
English.

REV. CHARLES DOREMUS, C. S. C.,
French.

REV. THOMAS IRVING, C. S. C.,
Mathematics.

REV. THOMAS BURKE, C. S. C.,
English.

REV. WILLIAM LENNARTZ, C. S. C.,
Latin and English.

REV. JAMES O'BRIEN, C. S. C.,
English and History.

REV. ERNEST DAVIS, C. S. C.,
Chemistry.

REV. ALPHONSE JUST, C. S. C.,
Latin and Music.

REV. JAMES QUINLAN, C. S. C.,
Christian Doctrine.

REV. FRANCIS ZERHUSEN, C. S. C.,
German.

REV. PATRICK HAGGERTY, C. S. C.,
Mathematics.

REV. PETER HEBERT, C. S. C.,
Latin.

REV. GEORGE HORWARTH, C. S. C.,
Mathematics.

BRO. PHILIP NERI, C. S. C.,
Penmanship.

BRO. CYPRIAN, C. S. C.,
Bookkeeping, Phonography and Typewriting.

FRANCIS XAVIER ACKERMAN, M. S.,
Drawing.

WILLIAM E. FARRELL, A. B.,
History.

JAMES HINES, Ph. B.,
History and Mathematics.

FRANCIS DERRICK, A. B.,
Music.

JOHN LORIMER WORDEN, B. S.,
Drawing and Science.

JOSEPH PLANTE, A. B., LL. B.,
Civics.

REGIDIUS KACZMAREK, A. B., M. S.,
Polish.

KNUTE ROCKNE, B. S. Phar.,
Chemistry

ARTHUR PINO, E. E.,
Mathematics.

RICHARD MICHAEL MEALLEY, A. B.,
Spanish.

ARTHUR HAYES, Ph. B.,
English.

PREPARATORY SCHOOL

The University maintains a fully equipped Preparatory School under the same general government as the Colleges, but having its own special corps of instructors. The schedules of studies are arranged to meet the need of thorough preparation for collegiate work, and embrace courses which, while giving as wide an education as can be obtained in the very best High Schools, prepare students directly for the group of studies they may select when entering the Freshman year. Four different programs of instruction are offered to students, each containing such special courses as directly meet the needs of the twenty college groups, while all embrace common subjects which are indispensably necessary in acquiring a fairly liberal education. The period of instruction covers four years.

The equipment and facilities for study in the Preparatory School are most complete. The laboratories are extensive and fully supplied with the latest improved appliances. The classes pursuing any subject are divided into sections, each containing a limited number of students. The sections are purposely limited in order that each student may receive close attention from the instructor in every recitation and laboratory period.

Examinations for admission are held at the opening of the School in September and embrace the subjects completed in the highest grade in the Grammar School. The expense for tuition, board, etc., will be found on pages 37, 38 and 39. The following fees are special to the Preparatory School:

LABORATORY FEES

Science C & D.—Elementary Botany and Zoology, each	$2.50
Science E.—Elementary Chemistry	5.00
Science F.—Elementary Physics	5.00

STUDIES PREPARATORY FOR THE DEPARTMENT OF CLASSICS IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
Latin	5	A	Latin	5	A
English	5	A	English	5	A
History	5	C	Civil Governm'	5	A
Mathematics	5	A	Mathematics	5	B
Science	5	B	Science	5	D

SECOND YEAR

Latin	5	B	Latin	5	B
Greek	5	A	Greek	5	A
English	5	B	English	5	B
History	5	B	History	5	B
Mathematics	5	D	Mathematics	5	D

THIRD YEAR

Latin	5	C	Latin	5	C
Greek	5	B	Greek	5	B
English	5	C	English	5	C
History	5	A	History	5	A
Mathematics	5	C	Mathematics	5	E

FOURTH YEAR

Latin	5	D	Latin	5	D
Greek	5	C	Greek	5	C
English	5	D	English	5	D
Science	5	E or F	Science	5	E or F
French or German	5	A	French or German	5	A

STUDIES PREPARATORY FOR THE DEPARTMENTS OF LETTERS, HISTORY AND ECONOMICS AND JOURNALISM IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
Latin	5	A	Latin	5	A
English	5	A	English	5	A
History	5	C	Civil Governm'	5	A
Mathematics	5	A	Mathematics	5	B
Science	5	B	Science	5	D

SECOND YEAR

Latin	5	B	Latin	5	B
French or German	5	A	French or German	5	A
English	5	B	English	5	B
History	5	B	History	5	B
Mathematics	5	D	Mathematics	5	D

THIRD YEAR

Latin	5	C	Latin	5	C
French or German	5	B	French or German	5	B
English	5	C	English	5	C
History	5	A	History	5	A
Mathematics	5	C	Mathematics	5	E

FOURTH YEAR

Latin	5	D	Latin	5	D
French or German	4	C	French or Greman	4	C
English	5	D	English	5	D
Science	5	E or F	Science	5	E or F
Elective	5		Elective	5	

STUDIES PREPARATORY FOR THE COLLEGE OF SCIENCE

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
Latin	5	A	Latin	5	A
Science	5	A	Science	5	D
History	5	C	Civil Governm'	5	A

SECOND YEAR

English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
Latin	5	B	Latin	5	B
Science	5	B	Science	5	C
History	5	B	History	5	B

THIRD YEAR

English	5	C	English	5	C
Mathematics	5	C	Mathematics	5	E
German	5	A	German	5	A
Science	5	E	Science	5	E
History	5	A	History	5	A

FOURTH YEAR

English	5	D	English	5	D
German	5	B	German	5	B
Science	5	F	Science	5	F
Drawing	5	A	Drawing	5	B
Mathematics	5	F	Elective	5	

STUDIES PREPARATORY FOR THE COLLEGES OF ENGINEERING AND ARCHITECTURE

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
History	5	C	Civil Governm'	5	A
Science	5	A	Science	5	D
*German	5	A	German	5	A

SECOND YEAR

English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
History	5	B	History	5	B
Science	5	B	Science	5	C
German	5	B	German	5	B

THIRD YEAR

English	5	C	English	5	C
Mathematics	5	C	Mahematics	5	E
Science	5	E	Science	5	E
German	5	C	German	5	C
History	5	A	History	5	A

FOURTH YEAR

English	5	D	English	5	D
Mathematics	5	F	Drawing	5	B
Drawing	5	A	Science	5	F
Science	5	F	Elective	10	
Elective	5				

*French or Spanish may be substituted for German.

Courses of Instruction

CHRISTIAN DOCTRINE

This is a four year course—Moral, Dogma, Liturgy, Church History. Portions of the Scriptures are given each year.

CIVIL GOVERNMENT

A.

This is a study of the science of government in connection with American institutions, and is intended to give the student some knowledge of the general principles of government and of the American Constitution. The subject begins by defining government; then is considered the object and necessity of government; origin of civil society; the principle of suffrage; different forms of government defined and compared; theories of representation. These topics necessarily are treated briefly, as the principal part of the course consists of a study of the Colonial government, the Articles of Confederation and their defects, the formation of the Constitution and its adoption. The study further comprises a critical analysis of each article and section of the American Constitution, thus enabling the student to acquire a clear conception of the division of powers of the National Government and the duties and responsibilities of each department.

[Five hours a week for one term.]

DRAWING

A.

This work is based on the rudiments of drawing and consists of the training necessary for the hand and the eye. Sketching is also done from simple objects of various forms. Charcoal from form, pencil sketching, charcoal sketching.

[Five hours a week for one or two terms.]

B.

Courses in Lettering, Geometrical Drawing and Elementary Projections in pencil and in pen and ink, preparatory to Drawing I in the Engineering Programs. A sufficient number of plates must be made by each student to prove his fitness for Drawing I.

[Five hours a week for one term.]

ENGLISH

A.

(a) Review of Grammar. General Rhetoric. Daily exercises in correct English, and weekly exercises in prose composition.

(b) Elements of Versification. Verse-writing and memory work in Poetry.

(c) Readings: Irving's *Sketch Book;* Stevenson's *Treasure Island;* Longfellow's *Evangeline;* Cooper's *Last of the Mohicans;* Poe's *Tales;* Hawthorne's *Great Stone Face*, *The Birthmark* and other stories; Palgrave's *Golden Treasure;* Hale's *The Man Without a Country;* Aesop's *Fables;* the *Merchant of Venice*, *Julius Caesar*.

[Five hours a week for two terms.]

B.

(a) Special Rhetoric. American Literature. Exercises in correct English and theme work in the Prose Forms.

(b) The Verse Forms. Theory, practice and memory work.

(c) Readings: Blackmore's *Lorna Doone; Poe's Poems;* Lamb's *Essays of Elia;* Scott's *Ivanhoe*, *The Lady of the Lake;* Coleridge's *The Ancient Mariner;* George Eliot's *Silas Marner;* Longfellow's *The Courtship of Miles Standish; Macbeth*, *As You Like It*.

[Five hours a week for two terms.]

C.

(a) History of English Literature. Written work in prose and verse. Memory work.

(b) Readings: Tennyson's *Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur;* Washington's *Farewell Address;* Webster's *First Bunker Hill Oration;* Carlyle's *Essay on Burns;* Chaucer's *Prologue;* Bacon's *Essays;* Goldsmith's *Vicar of Wakefield;* Thackeray's *Henry Esmond; Hamlet, The Tempest.*

[Five hours a week for two terms.]

D.

(a) Review of Grammar and Rhetoric. Special work in the literary types. Written work in prose and verse.

(b) Memory work in poetry and prose.

(c) Readings: Tennyson's *Idylls of the King;* Gate's *Selections from Newman;* Newman's, *The Dream of Gerontius; King Lear; A Midsummer Night's Dream;* other selections illustrative of the text-work given.

[Five hours a week for two terms.]

FRENCH

A.

Elements of pronunciation of French with exercises in correct reading. Grammar with oral and written exercises in the different parts of speech including the verbs and the essentials of Syntax. Reading of the selections in the grammar and also of three of the following works. "La Jeune Sibérienne," De Maistre; "La Mare au Diable, La petite Fadette," Sand; "Morceaux Choisis," Daudet; "Le Chien du Capitaine," Enault; "Le Pater," Coppée.

[Five hours a week for two terms.]

B.

Review of the grammar, syntax, irregular verbs, composition, dictation and conversation on practical topics. Reading of five of the following works: "Fables Choisies," La Fontaine; "Contes Choisis Balzac; "Le "Le Cid," Corneille; "Athalie," Racine; "L'Avare," Molière; "La Question d'Argent," Dumas; "Lettres de Mon Moulin," Daudet; "Madame Therèse," Erckmann-Chatrian.

[Five hours a week for two terms.]

C.

History of the origins and development of French literature. Composition, conversation, memorizing. Reading of the best authors of the nineteenth century. "Ruy Blas," Hugo; "Mémoires d'Outre Tombe," Chateaubriand; "Le Tailleur de Pierres," Lamartine; "Le Barbier de Séville," Beaumarchais; "Expèdition de Bonaparte en Egypte," Thiers; "Ste. Elizabeth de Hongrie," Montalembert.

[Five hours a week for two terms.]

N. B.—The works studied are not necessarily the same every year.

GREEK

A.

First Greek Book.

Epitome of the New Testament. *Stoffel.*

[Five hours a week for two terms.]

B.

Grammar. Etymology. *Hadley and Allen.*

Xenophon. Anabasis, Books I and II. *Harper and Wallace.*

Second Greek Exercise Book. *Heard.*
Epitome of the New Testament, continued. *Stoffel.*
[Five hours a week for two terms.]

C.

Grammar. Syntax. *Hadley and Allen.*
Xenophon. Anabasis, Books III and IV. *Harper and Wallace.*
Second Greek Exercise Book, completed. *Heard.*
Epitome of the New Testament, completed. *Stoffel.*
Homer, Iliad, Books I–VI. *Seymour.*
[Five hours a week for two terms.]

GERMAN

A.

Grammar. Translation of simple German prose into English; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

[Five hours a week for two terms.]

B.

Grammar. Translation into German of narrative prose and selections from history. Sight reading of selections from history.

[Five hours a week for two terms.]

C.

Sight reading of plays, poems and prose writing, Translation of selections from history and literature; original essays.

[Four hours a week for two terms.]

HISTORY

A.

Ancient History. The Eastern Nations. The History of Greece and of the Empire of Alexander. The Story of Rome. The Establishment of the Empire, and the rise of Christianity. The Roman-German, or Transition Age.

[Five hours a week for two terms.]

B.

Mediæval History and Modern History. The Barbarians and their Kingdoms. Mohammedanism and the Saracen Caliphs. The holy Roman Empire. The Great Schism and the rise of the Nations of Modern Europe. The Renaissance. The Age of Discovery. The Protestant Reformation. The Power of Spain and Germany. The Age of Louis XVI., and the rise of Russia. The Spanish and Austrian Successions. The Empire of England. The American Revolution. The French Revolution and the Wars of Napoleon. The Revolutions and Spirit of Nationality. The Formation of Germany and Italy.

[Five hours a week for two terms.]

C.

American History. A brief outline of the more important periods dealing with the beginning, growth and final formation of the republic; the principal causes leading to this formation; essential topics in the history of the country.

[Five hours a week for one term.]

LATIN

A.

First Year Latin, *Collar and Daniel.*
Selections from the Viri Romae. *Rolfe.*
[Five hours a week for two terms.]

B.

Grammar. Etymology. *Bennett.*
Caesar. Gallic War, Books I–IV. *Greenough.*
Nepos. Selected Lives. *Roberts.* [Elective.]
Latin Composition (Part I). *D'Ooge.*
[Five hours a week for two terms.]

C.

Grammar. Syntax, *Bennett.*
Cicero. Orations against Catiline. *Kelsey.*
Ovid. Selections. *Kelsey.*
Sallust. Catiline, *Nail.* [Elective.]
Latin Composition (Part II). *D'Ooge.*
[Five hours a week for two terms.]

D.

Grammar. Review. *Bennett.*
Cicero. Selected Orations and Letters. *Kelsey.*
Vergil. *Aeneid,* Books I–VI. *Frieze.*
Latin Composition (Part III). *D'Ooge.*
[Five hours a week for two terms.]

MATHEMATICS

A.

Algebra. This course for beginners in Algebra includes a study of the primary fundamental principles necessary to the courses which follow. The subjects dwelt upon in particular are factoring, highest common factor and least common multiple, which are afterward applied in their relation to fractions and the reduction of complex fractions. In as far as possible, concrete examples of their applications to kindred scientific subjects are applied by the teacher.

[Five hours a week for one term.]

B.

Algebra. In this course the study of equations is begun and continued through equations of the first degree. Fractional equations, systems of simultaneous equations, involutions, radicals and exponents complete the course, which is supplemented whenever possible with problems of practical application.

[Five hours a week for one term.]

C.

Algebra. This course begins with quadratic equations, pure and unaffected, followed by systems of simultaneous quadratic equations and those forms of radical equations of higher degree which may be solved by quadratic methods. Ratio and proportion, indeterminate equations, surds, imaginaries, inequalities, the progressions and the binomial theorem finish the work in this course. As in the preceding courses, special stress is placed upon the application of the theory to such examples as will show its application to elementary scientific subjects.

[Five hours a week for one term.]

D.

Geometry. This subject is completed as far as the end of plane geometry and includes a study of the theorems with proofs of exercises and original propositions. The habit of independent thinking is cultivated to some extent by the solution of special problems of a concrete nature intended to exhibit the relation of the process studied to practical examples.

[Five hours a week for two terms.]

E.

Geometry. This course is an extension of the preceding course. Planes, solid angles, polyhedrons, the cylinder, cone and sphere are all studied in detail, and the solution of original exercises and propositions of application is made a feature of the course.

[Five hours a week for one term.]

F.

Trigonometry. This subject includes both plane and spherical trigonometry. The work done is the equivalent of that in most of the elementary text-books. Special attention is given to goniometry on account of its application to calculus, and examples of a concrete nature are abundantly supplied.

[Five hours a week for one term.]

SCIENCE

A.

Physical Geography. An introductory and elementary study of the earth and its environments. The student will be led into a closer sympathy with the world about him. The various types of plant and animal life, together with topographical and climatic conditions will be considered.

[Five hours a week for one term.]

B.

Physiology. Lectures, recitations and demonstrations with the stereopticon. The study of the human skeleton including the physiology and hygiene of the bones. The action, relation, structure and hygiene of muscles. The digestive, circulatory and excretory systems and structure of the nervous system and simple experiments on the same.

[Five hours a week for one term.]

C.

Botany. This course is designed for beginners in this subject; it includes a study of the higher plants with reference to structure of root, stem, leaf, flower and seed. An introduction to the lower forms of plant life and their classification is also given.

[Five hours a week for one term.]

D.

Zoology. This course includes an introduction to the subject with studies of representative forms and their classification in the different groups of the animal kingdom. The subject is taught by recitations and laboratory work.

[Five hours a week for one term.]

E.

(a) **Chemistry.** An introductory course of experimental lectures on familiar subjects such as water, the air and its constituents, common salt, etc., leading up to discussions of the more important elements and their properties, and the fundamental laws and phenomena of chemistry. Text-book, *Maguire's Elements of Chemistry.*

[Three hours a week for two terms.]

(b) **Experimental Chemistry.** A laboratory course to accompany Course (a). A series of exercises to be performed by each student, and having as their main object the cultivation of the student's powers of observation and faculty of inductive reasoning. These exercises comprise a study of the principal metallic elements, including their preparation, properties and more familiar compounds. The directions for each experiment are made as brief as possible; the observation of facts and the drawings of correct conclusions therefrom being left, so far as the nature of the experiment will permit, to the student. *Laboratory Manual, Maguire.*

[Two hours (four hours of actual work) each week for one year.]

F.

(a) **Physics.** Introduction in elementary physics is given by lectures and recitations in which the general laws of mechanics, heat, acoustics, optics, electricity and magnetism are presented. The course is intended to meet the needs of those who desire a general knowledge of the subject, as well as to lay the foundation for advanced work. Particular attention is paid to the correct statement of principles so that in his advanced work the student will have nothing to unlearn or relearn.

[Three hours a week for two terms.]

(b) **Laboratory Work** of this course consists of a series of 60 experiments which verify and apply practically the fundamental principles of physics. The student also receives instruction in the use and careful handling of apparatus, accurate observation and correct deduction of results. Neat and concise reports of all experiments are kept by each student and form the basis for the grades in this work.

[Two hours (four hours of actual work) each
week for one year.]

THE COMMERCIAL HIGH SCHOOL

The Commercial School is designed to fuse with the ordinary High School or preparatory program of studies a special preparation for the processes of modern commercial life. Accordingly, the commercial program consists of a selection of the more important subjects in the High School curriculum to which are added the classes and experimental facilities found in a completed and up-to-date commercial college.

Owing to conditions specially favorable to study, Notre Dame claims to give the students of this school a more complete business training than can be obtained in any purely commercial college. The authorities require that students taking this program shall have completed two years of a regular High School or its equivalent. Special arrangements, however, will be made for young men who have no High School training, but who may have had practical business or office experience. Such students may follow the courses of this program of studies but will not be considered candidates for degrees. A certificate stating the field covered by their studies, will, however, be presented to them. Graduates of High Schools or equivalent preparatory schools will ordinarily be able to complete the work of this program in *one year*.

COMMERCIAL PROGRAM*

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
History	5	C	Civil Governm'	5	A
German	5	A	German	5	A
Science	5	A	Science	5	B

SECOND YEAR

English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
History	5	B	History	5	B
German	5	B	German	5	B
Science	5	E	Science	5	E

THIRD YEAR

English	5	C	English	5	C
Bookkeeping	5	A	Bookkeeping	5	A
Phonography	5	A	Phonography	5	A
Arithmetic	5	A	Arithmetic	5	B
Typewriting	5	A	Typewriting	5	A
Penmanship	2		Penmanship	2	

FOURTH YEAR

English	5	D	English	5	D
Bookkeeping	5	B	Bookkeeping	8	C
Phonography	5	B	Phonography	5	B
Com. Law	5	A	Bus. English	3	
Typewriting	3	B	Typewriting	3	A

*First and second year or equivalent required for entrance on commercial work proper.

Students who do not take Phonography will continue their mathematics or language in the third year and take up Physics in the fourth year.

PROGRAM OF INSTRUCTION

ARITHMETIC

A. **Percentage;** ratio and proportion, as far as involution and evolution.

B. **Percentage;** ratio and proportion (reviewed), involution and evolution; arithmetical and geometrical series; higher percentage; mensuration; arithmetical analysis.

BOOKKEEPING

A. Preparatory instruction and definitions; initiatory sets of Double Entry; retailing by Double Entry; special practice in writing business papers and business forms. Single Entry; changing Single to Double Entry.

B. **Retailing;** wholesaling; shipping and commission; jobbing; manufacturing; instalment and state agencies; joint stock companies; banking.

C. **Business Practice and Office Work.** Introducing Loose Leaf Accounting, Card Ledger Accounting, Loose Leaf and Sales Book, and the Voucher System of Bookkeeping and Business English.

COMMERCIAL LAW

A. Text-book, assigned topics.

BUSINESS ENGLISH

Practical topics. Speed and accuracy in work.

PHONOGRAPHY

A. Isaac Pitman's Short Course in Phonography.
B. **Speed Class.**

TYPEWRITING

A. The Van Sant System of Touch Typewriting.

B. **Speed Class.** Mimeograph and Hektograph work.

GRAMMAR SCHOOL WORK

The courses of the Preparatory School outlined above are equivalent to those of a High School. There is also a Junior Preparatory Department in which are taught all the branches of a Grammar School,—the students having every opportunity for preparing themselves as rapidly as possible for High School work.

THE SCHOOL FOR MINIMS

For the care and training of boys under the age of thirteen years, there has been established a primary school to which the most scrupulous attention has always been paid by the authorities of the University—it is known as St. Edward Hall.

Thorough and comprehensive instruction in all the elementary branches of an English education is here inparted, together with a rudimentary knowledge of Latin, French, German and Algebra. Vocal Music and Drawing involve no extra charge. The pupils of this department are taught by Sisters of the Holy Cross.

DISCIPLINE

The following is the order of the day: Rising at 6:30 a. m., toilet, etc., seven, breakfast, after which there is a short time given to exercise on the campus; eight, study; half-past nine, luncheon; ten, classes and study; a quarter to twelve, toilet; twelve, dinner, followed by recreation; half-past one, classes and study; three, recreation and luncheon; half-past four, classes and study; a quarter to six, toilet; six, supper, and recreation; half-past eight, retiring. From this it may be seen that while the Minims devote almost seven hours a day to study, they are never more than two hours in succession in the class-room. The recreation and exercise in the fresh air after each period of study unbend the mind and prepare the boys to return to their classes refreshed and ready to work.

The Minims are always under supervision during the hours of recreation as well as in the class-room and the study-hall. The presence, however, of the prefect is far from being a restraint on the amusement of the boys; for while it is the duty of the prefects to insist that their young charges shall always keep within the limits of the strictest propriety, they at the same time take part in all sports, organize games, and do everything in their power to foster the love for exercise. The playground is a broad, level, eight-acre field, well supplied with turning poles, swings, ladders, rings, parallel bars, and all other necessary gymnastic apparatus. That the boys make good use of them can be seen from their healthy, happy appearance, which invariably attracts the notice of visitors. Connected with the playground is a brick play-hall, one-hundred and sixty feet long and heated by steam. In this hall the boys play in rainy or cold weather.

The Sisters preside at the toilet; they clean and mend the clothing and see to all the needs and to the comfort and convenience of the Minims. Baths are taken every few days. Underclothing is changed regularly. Great care is taken that the boys be neatly dressed, and that the clothing be suitable for the season.

SOCIETIES

There are two societies in the Minim Department, that of the Guardian Angels of the Sanctuary, which has for its object to supply servers for the Chapel services, and the Sorin Association, which has been established with a view to give the pupils a start, as early as possible, in elocution. The society is presided over by one of the professors, who finds it a pleasant duty to draw out the talent of these interesting young orators. Meetings are held once a week, after school hours. These meetings are a source of pleasure as well as of profit. The members prepare original compositions, deliver declamations, are trained to debate, etc. Only the best behaved and more advanced in studies are admitted to membership. To encourage this young literary society, a gold medal for elocution is annually awarded at Commencement to the most deserving member.

GENERAL REMARKS

The discipline to which the Minims are subjected is much milder than that which is suited to members more advanced in age. Recourse is scarcely ever had to punishment. Those in charge endeavor to govern by kindness and gentleness, and by appealing to the boys' sense of honor.

There are gold medals awarded at the end of two full years to those whose deportment has been unexceptionable during that period. As this fact is made known to the Minim immediately after his entrance, he generally endeavors to shape his conduct with a view to receiving an Honor. The greatest care is taken to form their young hearts to habits of virtue, and to inculcate the practice of refined manners. Every effort is made to foster respect and affection for parents, to whom they are expected to write at least once a week.

Not the least of the advantages enjoyed by the Minims is their complete separation from the older students. A commodious building known as St. Edward Hall, affording ample accommodations for over one hundred pupils, is devoted to their use. It is four stories in height, one-hundred and fifty feet long, and forty-five feet wide, heated by steam, supplied throughout with electric light, and provided with hot and cold water. The ceiling in the study-hall, classrooms and sleeping apartments is fifteen feet high. The windows are large and numerous, affording abundant light and ventilation. The study-hall commands a charming view from each one of its eleven large windows.

It is tastefully decorated with statuary, pictures, plants, etc. Besides the pleasure the Minims derive from studying in this bright, cheerful hall, their tastes are cultivated by coming into contact with objects so refining. Fronting the building is a handsome park, which, with its fountains, rare trees and flowers, adds not a little to the beauty of St. Edward Hall, as well as to the happiness of its pupils.

These remarks, which have been made to satisfy parents and others who frequently write for more detailed information, will show that, while the Minims have every advantage to aid them in acquiring a foundation for future study, they have a home, where they enjoy the same ease and freedom that they would enjoy under the care of their mothers. For further information regarding the School for Minims apply for a special catalogue.

EXPENSES

For Students under Thirteen Years of Age

Matriculation Fee (first year only)	$ 10.00
Tuition, Board, Washing, Mending, Bed and Bedding, etc., per school year	250.00

Payable in advance as follows:

First Payment.—On Entrance in September.

Matriculation	10.00
Board and Tuition	150.00
Deposit on Book and Stationery Account	5.00
Gymnasium	2.50
Lecture and Concert Course Ticket	1.00

Music optional. For rates see below.

Second Payment.—On January 15.

Balance on Board and Tuition	$100.00

The charge for lessons on piano, violin, guitar or mandolin, and the use of the instrument, is fixed at $50.

Accounts are subject to sight draft, without notice, if not paid within ten days after they have been rendered.

Each pupil requires six shirts or waists, four suits of underwear, three night shirts, twleve pocket handkerchiefs, six pairs of stockings, six towels, two hats or caps, two pairs of shoes, a pair of overshoes, three suits of clothes, an overcoat, toilet set, blacking brush, soap, and a hand mirror. This direction concerning clothing is a suggestion, not a regulation. Any of the above supplies can be procured through the Students' Office at the University.

MILITARY

During the summer vacation of 1910 the Secretary of War appointed a retired officer of the United States Army, Professor of Military Science and Tactics in the University of Notre Dame.

The Military drill had for some years been compulsory in St. Edward Hall and in Carroll Hall. In the other departments this exercise had been altogether voluntary. Beginning with 1912–13 it was made compulsory three hours a week for all students except Seniors and Juniors in the college courses. Other students seeking exemption from the drill must make application to the President. It is accredited as a class, and absence from it is regarded as absence from class, involving the usual demerits and other penalties.
The cost of a uniform with military negligee shirts for warm weather is about seventeen dollars. Other military equipment is furnished by the United States Government.

The Military Department seeks to foster a spirit of patriotism in the student body, to develop habits of obedience, punctuality and self control and it aims to impart to cadets sufficient military knowledge to make them efficient company officers in case the United States should at any time require their services.

During the winter season a course of lectures and informal talks on military subjects is given by the Professor of Military Science and Tactics.

During the current year the University has constructed and equipped an indoor rifle gallery that answers all requirements and thereby interest in rifle shooting has been much stimulated. More than four hundred students have been under instruction and the team representing the Notre Dame Rifle Club of the National Rifle Association has shown consistent improvement.

Outdoor rifle practice, with U. S. Army Service rifles and ammunition is held during the spring on the Rifle Range of the National Guard, State of Indiana.

The course followed is that prescribed by the National Rifle Association of America.

Roster of Cadet Officers and 1st. Sergeants on March 1, 1916.

Cadet Colonel	Martin Emmett Walter
Cadet Lieutenant Colonel	Edward George Gushurst
Cadet Captain and Adjutant	Carleton Dietz Beh
Cadet First Lieutenant and Adjutant First Battalion	Austin Aloysius McNichols
Cadet First Lieutenant and Adjutant Second Battalion	Eugene Carroll
Cadet Signal Officer	Francis Jennings Vurpillat
Cadet Chief Trumpeter	John Edward Cassidy
Cadet Color Sergeants	Maximilian Gregory Kazus Bryan Odem

Company A

Cadet Captain	John Urban Riley
Cadet First Lieutenant	Albert Charles Schlipf
Cadet Second Lieutenant	Richard Joseph Dunn
Cadet First Sergeant	Walter Eugene Perkins

Company B

Cadet Captain	Edward Joseph Carleton (Commanding 2nd Battalion.)
Cadet First Lieutenant	Llewellyn David James
Cadet Second Lieutenant	Emmett Albert Royhans
Cadet First Sergeant	John Joseph Leahy

Company C

Cadet Captain	Edward Vincent Mooney (Commanding 1st Battalion.)
Cadet First Lieutenant	Robert Agnew Hattersley
Cadet Second Lieutenant	Louis Henry Hellert
Cadet Third Lieutenant	John Louis Reuss
Cadet First Sergeant	William Thomas McEniry

Company D

Cadet Captain	Jack Spalding Young
Cadet First Lieutenant	Arnold Francis Woods
Cadet Second Lieutenant	John Conrad Wittenberg
Cadet First Sergeant	Alfred Edward Morales

Company F

Cadet Captain	Joseph Francis Smith
Cadet First Lieutenant	Edward Nagel Marcus
Cadet Second Lieutenant	Joseph Francis Gargan
Cadet First Sergeant	John Joseph Blackwell

Company G

Cadet Captain	Louis Charles Fritch
Cadet First Lieutenant	George Dewey Haller
Cadet Second Lieutenant	Everett Augustus Blackman
Cadet First Sergeant	Clarence Wagner Bader

Sorin Cadets (Minims)

Cadet Captain	Hubert Aloysius Peugnet
Cadet First Lieutenant	Hugh Ragland Coffelt
Cadet Second Lieutenant	Frank Bond Summerville
Cadet First Sergeant	Henry Paul Ritzius Scherrer

LIST OF STUDENTS

Enrolled During the Year 1915-16

Abbot, John Henry	New Jersey
Ahern, David Harlan	Wisconsin
Ahern, William Henry	Indiana
Allardt, Joseph Edward	Indiana
Aldrete, Jorge	Mexico
Alfred, B	Connecticut
Allen, William Louis	Illinois
Allison, William Mack	Texas
Anderson, Barrett John	Indiana
Anderson, Cyril Robert	Illinois
Andres, William Joseph	Connecticut
*Andrus, Lucius Buckley	Indiana
Andrews, Francis Alvin	Illinois
Armstrong, Philip John	Illinois
Arnold, B.	Pennsylvania
Ashdown, Walter L	Illinois
Athanasius, B	Wisconsin

Bachman, Charles William	Illinois
Baczenas, John Theodore	Ohio
Bader, Clarence Wagner	Indiana
Bader, Eugene Francis	Ohio
Bailey, Edward Riley	Pennsylvania
Baine, Charles Francis	Massachusetts
Baldwin, George Francis	Illinois
Bannon, Henry Joseph	Connecticut
Barba, Manuel Francis	Central America
Barbour, Arthur Howard	Illinois
Barbour, William Howard	Illinois
Barrett, Edward Francis	Minnesota
Barry, George Francis	Illinois
Barry, James E., Jr	Pennsylvania
Barry, James John	Iowa
Barry, Norman Christopher	Illinois
Baujan, Harry Clifford	Illinois
Beaghan, John Francis	Illinois
Beaghan, Philip Vincent	Illinois

In absentia.

Beck, Severin Aloysius	Iowa
Becker, George Albert	Nebraska
Becker, John Henry	Nebraska
Becker, Victor Francis	Iowa
Beckman, Edward Joseph	Ohio
Beczkiewicz, Peter Alphonsus	Indiana
Beh, Carleton Dietz	Iowa
Beidler, John Jacob	Michigan
Benedict, B.	Minnesota
Benitez, Enrique Manuel	Mexico
Benitz, William Howard	Indiana
Beno, Emil John	Illinois
Benoist, Theodore	Missouri
Berchem, Alfred	Illinois
Berger, Paul Francis	Iowa
Bergman, Arthur Joseph	Indiana
Bergman, Ralph William	Iowa
Berkey, Kenneth Ray	Indiana
Berkmeyer, John William	Indiana
Berner, Leo Sebastian	Indiana
Bernoudy, Alfred Charles	Missouri
Berra, Humbert Antonio	Illinois
Berryhill, Jackson Glen	Oklahoma
Besten, Emil Alexius	Kentucky
Bielecki, Stanislaus Joseph	Indiana
Biggers, Clarence Ernest	Georgia
Birmingham, Francis Edward	New York
Birmingham, James Aloysius	New York
Blakeslee, Sherlie Willard	Michigan
Blackman, Everett Augustus	Illinois
Blackwell. John Joseph	Indiana
Boeckling, Ralph Antone	Ohio
Bohrer, Albert Thomas	Indiana
Boland, Francis Halsey	California
Boland, Francis Joseph	Massachusetts
Boland, James Isidore	Michigan
Boland, Stuart Morton	California
Bolger, Henry Joseph	Illinois
Boniface, B.	Ohio
Borne, Bernard Anthony	Illinois
Bosshard, Royal Henry	Illinois
Bowers, Bernard Lowney	Texas

Boyd-Snee, Harry Charles	Indiana
Boyer, John Stanislaus	Indiana
Boylan, James Kenneth	Ohio
Boyle, Francis Thomas	Indiana
Boyle, John Thomas	Wisconsin
Bradbury, William Ethelbert	Illinois
Brady, Bernard Robin	Ohio
Brady, Harry Michael	Ohio
Brannigan, Joseph Michael	Michigan
Bransfield, Michael Kirk	Illinois
Breen, Charles McCausland	Ohio
Breen, Edwin Thomas	Illinois
Brennan, James Henry	Illinois
Brennan, Martin George	Indiana
Brennan, Thomas Joseph	Indiana
Brentlinger, Melvin Grafton	Indiana
Breslin, Harry Patrick	Pennsylvania
Brice, John Patrick	Indiana
Brinkman, Richard Joseph	Indiana
Brosnahan, Henry Joseph	North Dakota
Brown, Clarence Henry	Michigan
Brown, Francis Aloysius	Michigan
Brown, Sherwood	Michigan
Brown, William Henry	Indiana
Browne, Augustus Albert	Texas
Browne, Robert Matthew	Texas
Bruck, Francis Norbert	Indiana
Bruno, B	Pennsylvania
Buchmann, Max, Jr	Colorado
Burk, Ernest Jacob	Indiana
Burke, Emmett Francis	Illinois
Burke, Harold Peter	New York
Burke, James Joseph	Oklahoma
Burt, Harry Raphael	Texas
Butler, John Richard	Illinois
Butler, Thomas Francis	Illinois
Byrne, Roger Hons	Texas
Byrne, Thomas Joseph	Illinois
Byrne, William Lewis	Indiana

Cabanne, James Shepard	Pennsylvania
Cadett, Arthur Aloysius	District of Columbia

Cain, Giles Leo	Illinois
Cain, Lawrence Raymond	Vermont
Calay, Arthur Vincent	Michigan
Call, Charles Warren	Michigan
Callaghan, John Henry	Ohio
Callahan, Raymond Daniel	Illinois
Callan, John Lawrence	Pennsylvania
Campbell, John Bernard	Kentucky
Cannon, Peter Edward	New Mexico
Carey, Charles Maurice	Kansas
Carey, Francis Jeremiah	New York
Carey, Joseph Thomas	Kansas
Carlton, Edward Joseph	New York
Carleton, Gerald	Indiana
Carr, Marvin Joseph	Illinois
Carr, Robert Cushman	Illinois
Carrico, Francis Joseph	Kentucky
Carroll, Eugene	Illinois
Carroll, Hugh Ernst	Indiana
Carroll, Joseph John	New Jersey
Carroll, Leonard Martin	Missouri
Carroll, Robert Strawbridge	Ohio
Carroll, Stuart Henry	Missouir
Casey, Stanley Francis	Minnesota
Casgrain, George Hammond	Michigan
Cassidy, Clifford Frederick	Indiana
Cassidy, John Edward	Illinois
Cassidy, Melvin Joseph	Illinois
Castillo, Carlos Andres	Cuba
Cauley, Aloysius Peter	Indiana
Cavanaugh, John Malachi	Ohio
Cavanaugh, Patrick Francis	Michigan
Cavaness, George Leo	Kentucky
Cavers, Keith Mackenzie	Nebraska
Centilvre, Francis Nierman	Indiana
Centlivre, Louis Herman	Indiana
Clancy, Joseph Raymond	Canada
Clark, Earl William	Minnseota
Clay, Odin Edward	Texas
Cleary, Harold James	Michigan
Cleary, Lawrence John	Michigan
Clements, Walter Louis	Kentucky

Clerkin, Leonard Albert	Ohio
Clohessy, Francis Joseph	New Jersey
Coan, Lee Gordon	Tennessee
Cofall, Stanley Bingham	Ohio
Coffelt, Hugh Ragland	Illinois
Coker, Wallace Earl	Texas
Conboy, Columbus	Indiana
Conboy, John Philip	Indiana
Condon, Frank Watrous	Mexico
Conner, John Edward	Michigan
Connolly, Charles Colton	New York
Connor, William Francis	Illinois
Connors, Francis Edward	Illinois
Conrad, Raymond John	Wisconsin
Conway, Thomas Wilson	Massachusetts
Cook, Charles Laurens	Illinois
Cook, Herman Andrew	Oregon
Cook, James Charles	Wisconsin
Cook, John Daniel	Ohio
Cook, Leo Louis	Indiana
Cook, Nathan Harold	Illinois
Coonley, Clinton George	Illinois
Corona, Joseph	Cuba
Corcoran, Charles George	Illinois
*Corcoran, William Charles	Oregon
Cormac, B.	Indiana
Corrigan, John Vincent	Illinois
Cosgrove, Patrick Thomas	Illinois
Cosgrove, Robert Wayne	Michigan
Costello, Emmett James	Indiana
Coughlin, Frank Edward	Illinois
Coyle, Arthur James	Indiana
Coyle, Matthew Aloysius	Wisconsin
Craig, Norvin Leo	Indiana
Craine, James Francis	Pennsylvania
Crawford, John Sherman	Pennsylvania
Cremer, Marcellus Adolph	Illinois
Crombie, Edmund Burke	Wisconsin
Crosby, Guillermo Juan	Peru, South America
Cullen, Mark Aloysius	Wisconsin
Cullen, Rodney William	Ohio

In absentia.

Cullinan, Frank Leo	Pennsylvania
Cuny, Chester	Illinois
Curley, William Aloysius	Illinois
Curran, Thomas Henry	Illinois
Curtin, Leo Anthony	Ohio
Curtis, Daniel Carr	Illinois
Curtis, James Earl	Indiana
Cwiklinski, Stephen Stanley	Indiana
Cyril, B.	Minnesota

Daley, Richard Daniel	New York
Daly, Eldon James	Alaska
Daly, Martin Benson	Ohio
Daly, Robert Emmett	Pennsylvania
Dant, John William	Kentucky
Daugherty, Paul John	Ohio
Daugherty, Robert Joseph	Nebraska
Davila, John Rafael	Porto Rico
Davison, Michael Heim	Missouri
Deary, William Agnew	Minnesota
De Boeuf, Ambrose Louis	Illinois
Dee, Samuel Allerton	Illinois
de Castro, Ezequiel Rey	Peru, South America
de Castro, Hector Rey	Peru, South America
de Fries, Erich Francis	Iowa
de Gree, Walter Bernard	Minnesota
de la Garza, Secundo Martin	Texas
Delaney, Harold Richard	Oklahoma
Delph, John Francis	Indiana
Denigan, William Edward	Wisconsin
Denlinger, James McLaughlin	Pennsylvania
Dennison, John Rexford	Iowa
Denvir, Edward Joseph	Illinois
De Stefano, Emilio	Illinois
De Stefano, Vincent Rocco	Illinois
Diener, Charles Norman	Wisconsin
Di Lorenzo, Secondino	Illinois
D'Isa, Ezra Louis	Massachusetts
D'Isa, Frank Angelo	Massachusetts
Dister, Oscar Joseph	Ohio
Dixon, John Sherwood	Illinois
Dixon, Paul Goodrich	Illinois

Dockry, Christopher Beahan	Wisconsin
Dohn, Bernard Charles	Michigan
Dollard, Thomas Vincent	New York
Donahue, Edward Brown	Wyoming
Donahue, George Damien	Indiana
Donahue, James Francis	Pennsylvania
Donahue, William Joseph	Illinois
Donnelly, Edwin Charles	Ohio
Donnelly, Eugene Owen	Illinois
Donnelly, Jefferson James	Missouri
Donnelly, Richard Morrell	Missouri
Donnelly, Robert Barrett	Missouri
Dorais, Joseph Emery	Wisconsin
Dorner, John Harvey	Indiana
Dorwin, Oscar John	Wisconsin
Dorsey, Francis James	District of Columbia
Douglass, Walter Joseph	New York
Dowd, John Francis	Illinois
Downey, Gerald William	Illinois
Downey, Raymond John	Illinois
Downey, Henry Patrick	Indiana
Downey, Philip Geiger	Indiana
Downey, Russell Hugh	Indiana
Downes, Joseph Frederick	Indiana
Doyle, Francis Henry	Missouri
Doyle, John Patrick	Wisconsin
Doyle, Robert James	Missouri
Drapek, John Stanley	Indiana
Du Bois, Leo Vital	Oklahoma
Ducey, Walter James	Michigan
Duffy, Drexel Lawrence	Missouri
Duffy, John Edward	Indiana
Duffy Paul Vincent	Missouri
Duffy, Thomas Calasanctius	Rhode Island
Duncan, Archibald Milton	Wisconsin
Dundon, Edward Joseph	Michigan
Dunn, Edward Patrick	Wisconsin
Dunn, Richard Joseph	Illinois
Dwyer, George Thomas	Missouri

Early, Francis William	Illinois
Early, Michael James	Oregon

Eckel, Jacob Edward	New York
Eden, Clifford Deneve	Michigan
Edgren, Paul Eugene	Indiana
Edmondson, Delmar Joseph	Ohio
Edward, B	New York
Egan, Frank Cyril	Illinois
Egan, William Joseph	Ohio
Eilers, Mark Gerard	New York
Eiseman, Vollmer Solomon	Illinois
Ellis, Howard James	Indiana
Elward, Allen Henry	Massachusetts
English, Harold Joseph	Illinois
Erpelding, Donald Horace	Minnesota
Erskine, James Alexander	Michigan
Erskine, Thomas Chester	Michigan
Estelle, Arthur Murray	Nebraska
Estrada, William Martin	Cuba
Eugene, B	Michigan
Evans, Leonard Delbert	Iowa

Fabrega, Calixto Jose	Panama
Falk, George Edward	Nebraska
Falk, John Joseph	Wisconsin
Falkenberg, Joseph John	Missouri
Falkenberg, Robert Lawrence	Missouri
Fallon, Regis	Ohio
Fallon, Thomas	Ohio
Farnam, William George	Michigan
Farr, Bernard Armond	Indiana
Farrington, Francis Sherman	Wisconsin
Fasenmeyer, Anthony Charles	Kansas
Feiwell, Samuel	Indiana
Feldott, Joseph John	Illinois
Fenelon, Francis Benedict	Wisconsin
Fenelon, John Patrick	Iowa
Fenelon, Joseph Francis	Wisconsin
Fenlon, Ignatius Paul	Pennsylvania
Fennessy Thomas Joseph	Illinois
Ferran, Leopold Charles	New Mexico
Fernandez, Candido	Spain
Fernandez, Manuel	Spain
Fidelis, B	Wisconsin

Finch, Wilmer Otis	New York
Fintan, B	New York
Fitzgerald, Charles Freeman	Washington
Fitzgerald, Gerald Joseph	Massachusetts
Fitzgerald, John Dean	Illinois
Fitzgerald, Leo Bernard	New York
Fitzgerald, Wilber Joseph	Illinois
Fitzpatrick, Edward Bryan	Illinois
Fitzpatrick, George Michael	Michigan
Fleischman, Roy Moe	Illinois
Flood, Leo Francis	West Virginia
Flynn, Gerald John	Michigan
Flynn, Joseph Francis	Indiana
Flynn, Joseph Patrick	New York
Flynn, Thomas Henry	Indiana
Fogarty, James Paul	Indiana
Fogarty, James Anthony	Idaho
Fogarty, William Stephen	Idaho
Foley, Clement Vincent	New Jersey
Foley, James William	Massachusetts
Foley, Raymond Maurice	Iowa
Follett, Robert Edward	Pennsylvania
Ford, Layne Samuel	Minnesota
Ford, Leo Matthew	Indiana
Ford, Thomas Daniel	Illinois
Forga, Alfredo	Peru, South America
Fox, Kenneth Biglin	New York
Fox, William Francis	Indiana
Francis, Edward Alexander	Pennsylvania
Frantz, George Franklin	Wisconsin
Freund, Albert Joseph	Pennsylvania
Fries, Alfred Francis	Michigan
Friestedt, Willis Danforth	Illinois
Fritch, Louis Charles	Illinois
Fritz, Henry William	Illinois
Fritzsche, Allen William	Ohio

Gabriel, B	Michigan
Gallagher, James Sylvester	Ohio
Galvin, Timothy Patrick	Indiana
Gargan, Joseph Francis	Massachusetts
Garlick, Gordon Hetfield	Michigan

Garry, John Joseph	Virginia
Geelan, Leo Christopher	South Dakota
George, B	Illinois
Gerald, B.	Indiana
Gibbons, Thomas Henry	Illinois
Giblin, Vincent Claude	Alabama
Gilbert, B.	Michigan
Gillam, Henry Edward	Michigan
Gilson, Cletus Oliver	Pennsylvania
Girardin, Raymond Eugene	Michigan
Glahe, Frederick William	Illinois
Glasscott, Lorenzo Alexander	Indiana
Glasser, Alfred Joseph	Indiana
Gleim, Fidel August	Texas
Gloeckner, Albert Anthony	Ohio
Glueckert, Henry George	Indiana
Godfrey, B.	Canada
Godes, Harry Francis	Iowa
Gonzalez, Jose Manuel	Cuba
Gonzalez, Manuel Jose	Cuba
Gonzalez, Rafael Balmori	Philippine Islands
Goodall, Francis Peter	Ohio
Gooley, Philip Edward	New York
Goodpaster, Harold Peter	Illinois
Gorman, Brendan Ignatius	Illinois
Gorman, Francis Maher	Michigan
Gorman, Lawrence Oswald	Illinois
Gorman, Thomas Henry	Ohio
Gormley, Paul Welch	Indiana
Grady, William Albert	New Jersey
Graham, Raymond John	Illinois
Gray, David Bancroft	Illinois
Gray, Everett Miles	Illinois
Gray, Laurin Burton	Illinois
Graner, Lawrence Leo	Pennsylvania
Grant, Donald Chester	Indiana
Grego, Anthony Louis	Illinois
Grey, Donald Matthew	District of Columbia
Griffin, Robert James	Iowa
Grimes, Charles Aloysius	Rhode Island
Guendling, John Edward	Indiana
Guido, Joseph John	Illinois

Guinan, George Emmett	New York
Gushurst, Edward George	South Dakota
Gutierrez, Rafael Diez	Mexico

Haberer, Bernard Villars	New York
Hackett, George Marcellus	Kentucky
Haldeman, Horace Paul	Texas
Haller, George Dewey	Michigan
Halmes, George Nicholas	Nebraska
Halsema, Lambert Joseph	Indiana
Hand, Gilbert Philip	Wisconsin
Haney, Bernard Edward	Indiana
Hanifin, Thomas Joseph	Illinois
Hanley, William Michael	Illinois
Hanlon, James Francis	Colorado
Hannan, Emmett David	Kentucky
Hanna, John Martin	Kentucky
Hannan, Robert Eugene	Wisconsin
Hannan, Willian Frank	Kentucky
Hansel, John Joseph	Indiana
Harbert, George Edwin	Illinois
Hardy, Russell Charles	Kansas
Harl, Louis Patrick	Kentucky
Harpman, Jerome Joachim	Illinois
Harshman, Porter Brinley	Indiana
Hart, Frank Patrick	Illinois
Hartley, Basil Hogan	Kansas
Harvat, John Ignatius	Montana
Haskins, Elwood	Indiana
Hattersley, Robert Agnew	Indiana
Havey, William Cornelius	Indiana
Hawley, John William	Illinois
Hawxhurst, Erle	Illinois
Hayes, Arthur James	Minnesota
Hayes, James Dawson	Indiana
Hayes, Thomas Adrian	Indiana
Healy, Thomas Francis	Ireland
Healy, Thomas Moritz	Iowa
Healy, William Andrew	Michigan
Hebert, Gaston Arthur	Arkansas
Hebert, Walter Jones	Arkansas
Heenan, Daniel	Illinois

Heffernan, Bernard Daniel	Indiana
Heinrich, Wolfgang Arthur	New York
Hellert, Louis Henry	Indiana
Helmen, Vernon Reuben	Indiana
Henehan, Thomas Patrick	Pennsylvania
Henry, B.	Ohio
Henry, William Cyril	Illinois
Herrmann, Harlan	Illinois
Hickey, James Lawrence	Michigan
Higgins, Joseph Alexander	Connecticut
Higgins, Stanley	South Dakota
Hilgartner, Daniel Edward	Illinois
Hillier, Dougal James	Michigan
Hiss, Frank Joseph	Indiana
Hoarty, Verdin Thomas	Illinois
Hoban, Thomas Jefferson	Illinois
Hogan, James Edward	Indiana
Hogan, Thomas Arnold	Illinois
Holden, George Francis	Indiana
Holden, John Edward	Indiana
Holden, Philip William	Indiana
Holderith, George Leo	Indiana
Holeman, John Hopson	Kentucky
Holland, Thomas Vincent	Kansas
Holman, John Henry	Canada
Holslag, Frank William	Illinois
Hope, Arthur Barry	Illinois
Hosinski, Aloysius Wladyslaus	Indiana
Howarth, Edward	Indiana
Huber, Edward Timothy	Ohio
Huber, Robert Edward	Indiana
*Huerkamp, Joseph Michael	Ohio
Hughes, Arthur John	Illinois
Hummert, Lawrence William	Illinois
Humphreys, Raymond Murto	Colorado
Hungerford, William Russell	Pennsylvania
Hunter, Arthur Burton	Indiana
Hunter, Edwin Walter	Indiana
Hurley, Francis John	Illinois
Hyland, Justin Edward	New York
Hyland, Richard Vincent	New York

In absentia.

Hyman, Thomas Richard	Illinois

Ignatius, B	Ohio
Insley, Stanley Wilbert	Michigan
Irving, John Ambrose	Wisconsin
Irwin, Clinton Francis	Illinois

Jackson, James Madison	West Virginia
Joffery, Edward Handley	Indiana
James, B	Iowa
James, Clarence Joseph	Pennsylvania
Jameson, John James	Illinois
James, Llewellyn David	Missouri
Jankoswki, Sigismund Aloysius	Indiana
Jennett, Earl Francis	Illinois
Jiminez, Roberto Antonio	Panama, Central America
Johnson, Nicholas Stanislaus	Illinois
Jones, Charles Warren	Indiana
Jones, Francis David	Pennsylvania
Jones, Harry Bernard	Michigan
Jones, Jerold Joseph	Oklahoma
Jones, Leo John	Michigan
Jose, Manuel	Philippine Islands
Joyce, Martin Edward	Wisconsin

Kalish, William Jerome	Illinois
Kane, Edwin Lyle	California
Kane, Willard George	Illinois
Kane, Joseph John	Texas
Kasper, Thomas Cyril	Minnesota
Kauffman, Daniel Emmanuel	Indiana
Kazus, Maximillian Gregory	New York
Keady, Maurice Bernard	New York
Keefe, Emmett George	Indiana
Keegan, Daniel Paul	Illinois
Keegan, John Anglim	Illinois
Keenan, Francis Joseph	Illinois
Keenan, Frederick Godfrey	Indiana
Keenan, Hubert Fred	Wyoming
Keenan, Philip Kenneth	New York
Keenan, William Harold	Ohio
Keifer, Louis Frederick	Indiana

Kelley, Gordon Joseph	Illinois
Kelley, William Henry	Indiana
Kelly, Clement Vivian	Alabama
Kelly, Edward Joseph	Rhode Island
Kelly, Emmett John	Illinois
Kelly, Harry Francis	Illinois
Kelly, Herbert Barrett	Alabama
Kelly, Luke Leo	Massachusetts
Kelly, Richard Francis	Wisconsin
Kelly, Thomas Armond	Illinois
Kelly, Thomas Charles	Vermont
Kelly, Thomas Clark	Wisconsin
Kelly, William Henry, Jr.	Indiana
Kennedy, William Edward	Illinois
Kenny, Edward Joseph	New York
Kenny, Gerard Joseph	New York
Kenny, Thomas Augustus	New York
Kenny, William Francis	New York
Kieley, Charles Cornelius	Illinois
Kiernan, Frank Alexander	Oregon
Kilian, B.	New York
Killelea, John Gregory	Illinois
Kimmel, Cornelius William	New York
Kinerk, Louis Ormond	Indiana
King, Francis Christian	Illinois
King, Hollis Edward	Nebraska
King, Thomas Henry	Indiana
Kintz, Charles Otto	Indiana
Kintz, Paul Joseph	Indiana
Kintz, Peter Kuhule	Indiana
Kiplinger, Don Colbert	Nebraska
Kirby, James John	Illinois
Kirkland, Frank Monroe	Oregon
Kline, Clarence Joseph	Pennsylvania
Kline, James Edward	Indiana
Kolb, Louis Charles	Kentucky
Kovacs, Joseph John	Indiana
Kowalski, Sigfryd Theodore	Indiana
Krajewski, Casimir Ignatius	Illinois
Kramer, Walter Francis	Kansas
Kranz, Albert John	Ohio
Kuhle, Otto Theodore	South Dakota

Kwist, John Jannis	Indiana

La Fortune, Joseph Aloysius	Indiana
Lagan, Randall Clifford	Indiana
Lalley, Edward Joseph	Minnesota
Lalor, Walter Matthew	Illinois
Lamb, Luke	Missouri
Lammers, Martin William	Michigan
Lanahan, Logan Anthony	Indiana
Landers, Walter Brennan	Missouri
Landgraf, Gorioies Albert	Indiana
Lane, Bernard Aloysius	Michigan
Lang, Lewis Booth	Indiana
Langan, Cyril Glynn	Nebraska
Langan, Francis Joseph	Illinois
Langlois, Napoleon Edward	Michigan
Lepore, Donato	Connecticut
Lapperre, Edward Richard	Illinois
Larrazola, Octaviano Ambrosio	New Mexico
La Ponsey, Charles Gabriel	Michigan
Lathrop, Ralph Jefferson	Wisconsin
Lauerman, Frank Joseph	Wisconsin
Lauerman, Raymond Marshall	Wisconsin
La Vallette, Paul Jules	Iowa
Lavery, Hugh Thomas	Connecticut
Lawbaugh, LaRue Charles	Illinois
Lawless, Richard Francis	Indiana
Leahy, John Joseph	New York
Lea Mond, Arthur James	New Jersey
Leinenkugel, Jacob Matthias	Wisconsin
Lemmer, John Augustus	Michigan
Lenihan, Emmett George	Ohio
Lennane, Charles Russell	Michigan
Lentz, Charles Elee	Missouri
Leoni, Paul John	Illinois
Leopold, Walter Joseph	Illinois
Leser, John Emmett	Ohio
Leslie, Humphrey Louis	Iowa
Lewis, Joseph William	Iowa
Lewis, Laurence	Michigan
Lightfoot, Richard Daniel	Illinois
Lillis, John Joseph	Pennsylvania

Lindeman, Edward George	Indiana
Lindeman, Joseph Francis	Indiana
Lockard, Frank Robert	Ohio
Locke, David Archibald	Arkansas
Locke, Lucien Post	Arkansas
Locke, Morris Robert	Arkansas
Loftus, Harold James	Illinois
Logan, James Patrick	Colorado
Lonergan, James Lester	Michigan
Long, Henry Anthony	Michigan
Loosen, Julius Paul	Oklahoma
Lower, John Donald	Indiana
Lucia, Charles Edward	Massachusetts
Lydon, Arthur William	New York
Lynch, Adrian Ryan	Iowa
Lynch, Bernard Henry	Nebraska
Lynch, James Robert	Missouri
Lyons, Theodore John	Kansas
Lyons, William Joseph	New York
Madegan, Edward Patrick	Illinois
MacGregor Donald Patrick,	Indiana
Magers, Leo John	Indiana
Maguire, Leon Joseph	Illinois
Mahaffey, Frederick Leo	Indiana
Mahoney, Francis Benedict	Ohio
Mahoney, John Francis	Wyoming
Makielski, Stanislaus John	Indiana
Mackens, Raymond Thomas	South Dakota
Malarney, Philip Joseph	Michigan
Malone, Grover John	Illinois
Malone, James Redmond	Illinois
Maloney, Charles Patrick	Indiana
Maloney, John Aloysius	Michigan
Mangan, Michael Joseph	Ireland
Mangin, Joseph Aloysius	New Jersey
Marcus, Edward Nagel	Indiana
Mark, B	Michigan
Markey, Harold William	South Dakota
Mars, Thomas Joseph	New York
Marshall, Francis Bernard	Illinois
Martin, Francis Joseph	Illinois

Martin, Frederick Charles	Indiana
Martin, George Francis	Illinois
Martin, John Edward	Wisconsin
Martin, Joseph Ignatius	Wisconsin
Martin, Roderick James	Nebraska
Martinez, Jose	Mexico
Mason, Walter Albert	Wisconsin
Masterson, Francis Bernard	Rhode Island
Mathiasch, Albert	Indiana
Matthew, B	Iowa
Matthews, James Garfield	Indiana
Matthews, Joseph Lurry	Missouri
May, Arthur Lawrence	Indiana
May, Sherman	Wisconsin
May, Stanley Joseph	Wisconsin
Mayer, Aaron	Illinois
Mayer, Leonard Frank	Wisconsin
Meagher, John Francis	Illinois
Mealley, Richard Michael	California
Meara, James Michael	Kansas
Meehan, Edward John	Pennsylvania
Merriman, Clifford Alphonsus	Illinois
Mersch, Victor Sylvester	Indiana
Metallana P. Dominico	Spain
Meuser, William Beck	Iowa
Meyer, Joseph Albert	Ohio
Meyers, Stephen Francis	Illinois
Micinski, Leo John	Indiana
Micinski, John Stanislaus	Indiana
Mileski, Francis Joseph	Michigan
Miley, Henry Roy	Ohio
Millbern, Fesler Allen	Indiana
Miller, Bernard Henry	Wisconsin
Miller, Earl Patrick	Ohio
Miller, Grover Francis	Wisconsin
Miller, Jerome John	Indiana
Miller, John Milton	Illinois
Miller, Joseph Henry	New York
Miller, Rudolph John	Ohio
Miller, Walter Riley	Ohio
Miller, Ward Anthony Jr	Ohio
Mills, Ralph Joseph	Illinois

Minavio, John Edward	New York
Mohan, Elmer Joseph	Illinois
Monaco, Edward	Illinois
Monarch, James McKenzie	Indiana
Monighan, Francis Patrick	Pennsylvania
Monning, Norbert Gerhardt	Tennessee
Moody, Francis Alexander	Illinois
Mooney, Charles Patrick Joseph	Tennessee
Mooney, Edward Vincent	Pennsylvania
Mooney, Felix Patrick	Illinois
Moore, Arthur James	Ohio
Moore, Elwyn Michael	Illinois
Moore, Gerald Warner	Wisconsin
Moore, Philip Samuel	Indiana
Moore, Thomas Louis	Illinois
Morales, Alfred Edward	Texas
Moran, Edgar Francis	Oklahoma
Morency, Henry Lloyd	Michigan
Morgan, Guy	Washington
Morgan, Lawrence Byrne	Illinois
Morris, Samuel Milton	Illinois
Morrison, Charles Welstead	Illinois
Morton, Edward Joseph	Wyoming
Moser, Carl Frederick	Indiana
Mott, Thomas Dillingham	Indiana
Mottz, Charles Peter	Missouri
Moynihan, Andrew Joseph	Indiana
Muckenthaler, Joseph Aloysius	Indiana
Muhs, Edward Joseph	New York
Mulcair, Michael Aloysius	Ireland
Mulholland, Clement Bernard	Iowa
Mulholland, Emmett Paul	Iowa
Mullaley, William Joseph	Illinois
Mullen, William Patrick	Nebraska
Muller, John Philip	Indiana
Mulligan, Francis Edward	New York
Mullin, Thomas Joseph	New Jersey
Mulqueen, Leo Francis	New York
Munecas, Braulio Antonio	Cuba
Munecas, Jose Federico	Cuba
Murch, Raymond Martin	Michigan
Murphy, Ambrose Joseph	Wisconsin

Murphy, Clarence Hartnett	Michigan
Murphy, Edward James	Iowa
Murphy, George Louis	Minnesota
Murphy, Jeremiah Emmett	Connecticut
Murray, Patrick Joseph	New York
Murray, Raymond Joseph	Michigan
Murray, Raymond William	Connecticut
Murtaugh, Thomas Gerald	Indiana
McAllister, Charles Anthony	Indiana
McAllister, Joseph Robert	Indiana
McAndrew, John Justin	New Jersey
McAndrew, Thomas William	New Jersey
McAuliffe, Robert Harold	New York
McBride, Eugene Richard	Pennsylvania
McCabe, Raymond Joseph	New York
McCaffery, Bernard Joseph	Indiana
McCaffery, Joseph James	Indiana
McCaffrey, Mark Aloysius	Washington
McCaffrey, Patrick Raphael	Ohio
McCaffrey, Ralph John	New York
McCarthy, Jeremiah Anthony	Indiana
McCarthy, John Francis	Montana
McCauley, Charles	Tennessee
McConnell, Harold Andrew	Nebraska
McConnell, Walton Jerome	Indiana
McCourt, Walter Patrick	Ohio
McCullough, Harry Mitchell	Iowa
McDermitt, Francis Frederick	New Jersey
McDermott, Gerald Allison	Illinois
McDermott, Gerard Brendan	Illinois
McDonald, George De Wald	Illinois
McDonald, James Harold	Illinois
McDonald, Leroy Joseph	Illinois
McDonald, William Breen	Illinois
McDonough, Andrew Leo	New Jersey
McDonough, James Moore	Texas
McDowell, Horace Scherrer	Illinois
McElroy, Henry Joseph	Connecticut
McEniry, Eugene Francis	Iowa
McEniry, William Thomas	Illinois
McGahan, Leo John	Michigan
McGarry, Bernard Clairvaux	Ohio

McGaughey, John Charles	Illinois
McGinnis, Joseph Cyril	Illinois
McGlynn, Daniel Francis	Illinois
McGlynn, Robert Emmett	Illinois
McGonigle, Stephen Francis	Illinois
McGovern, Eugene Leonard	Montana
McGrain, Francis Thomas	New York
McGrath, Arnold John	Illinois
McGrath, Joseph Michael	New York
McGuire, Charles Aloysius	Oklahoma
McGuire, James Emmett	Indiana
McGuire, Leo Francis	Oklahoma
McGuire, Robert Gerald	Illinois
McGuire, William Theodore	Oklahoma
McInerny, Arnold Matthew	Indiana
McInerney, Gerald John	Michigan
McIver, Charles Joseph	Washington
McKenna, Joseph William	New York
McKinley, Francis Aloysius	Indiana
McKinley, Paul Anthony	Indiana
McKinney, Howard Robert	Michigan
McKinnie, Flemming	Indiana
McLaughlin, Edward Manning	Michigan
McLaughlin, Thomas Archibald	Michigan
McLaughlin, William Navarre	New York
McMahon, James Torrence	Ohio
McManus, Thomas Joseph	Illinois
McManus, William Allen	Illinois
McNally, Daniel Lawrence	Michigan
McNamara, William Michael	Illinois
McNichols, Austin Aloysius	Illinois
McNichols, Harry Joseph	Illinois
McNulty, James Michael	Pennsylvania
McOsker, Edward Joseph	Illinois
Nagel, Vincent Anthony	Indiana
Nash, Richard McCoy	Michigan
Naughton, Denis Francis	Montana
Navin, Walter Martin	Ohio
Neelan, Raymond Francis	Pennsylvania
Nelson, Theodore	Illinois
Nertney, Thomas Walter	Illinois

Neuses, Arthur William	Wisconsin
Newgass, Mitchell Cornelius	Illinois
Neylon, Francis Joseph	New York
Niemier, Melchior Stanislaus	Indiana
Nigro, Alfred Luigi	Illinois
Nolan, Walter Henry	Ohio
Noonan, William Joseph	Illinois

Oberholzer, Frederick Charles	Ohio
Oberwinder, Helmuth	Nebraska
Oberwinder, James	Nebraska
O'Brian, William Crim	Indiana
O'Byrne, Joseph William	Colorado
O'Byrne, Thomas Elton	Alabama
O'Callaghan, Robert James	Michigan
O'Connell, Eugene Daniel	Indiana
O'Connell, Theodore William	Illinois
O'Connor, Earl Thomas	Pennsylvania
O'Connor, Edward James	Kentucky
O'Connor, Jeremiah Patrick	New York
Odem, Bryan	Texas
Odem, James Francis	Texas
O'Donnell, John Hugh	Michigan
O'Donnell, Leo Day	Pennsylvania
O'Hara, Francis Joseph	Indiana
O'Hara, Joseph Patrick	Iowa
O'Keefe, John Norbert	North Dakota
O'Laughlin, George Thomas	Wisconsin
O'Laughlin, James Henry	Iowa
O'Laughlin, Robert Edward	Wisconsin
Olney, Thomas Albert	Indiana
Olivella, Felix	San Salvador, Central America
O'Malley, Charles Joseph	Pennsylvania
O'Meara, Thomas	Illinois
O'Neill, Howard John	Illinois
O'Neill, Hugh Jr	Ohio
O'Neill, Leo Edward	New York
Opitz, Bruce Harold	Illinois
Ormerod, Ernest Joseph	Indiana
Ormsby, Edward Paul	New Jersey
O'Shea, Maurice Joseph	Illinois
O'Sullivan, Albert Stephen	Illinois

O'Sullivan, Joseph	Illinois
O'Sullivan, Patrick Clifford	Illinois
Otero, Augustine	Cuba
Ovington, Robert James	Ohio
Owen, B	Michigan

Palmer, Cornelius Raymond	Illinois
Parke, Frederick John	Illinois
Parker, Howard Russell	California
Parker, Louis Eugene	Illinois
Parker, Owen Wesley	Tennessee
Parish, Anthony Marsile	Illinois
Paszek, Hilary Joseph	Indiana
Pearson, Dudley Lester	Wisconsin
Pender, John Joseph	Ohio
Perkins, Walter Eugene	Canada
Perron, William Joseph	Michigan
Perrone, Pasquale Joseph	Indiana
Perrott, Samuel Ward	Indiana
Peugnet, Amadee Joseph	Missouri
Peugnet, Hubert Aloysius	Missouri
Phelan, Mervin James	Oregon
Phelps, Herbert Hampton	Missouri
Philbin, David	Oregon
Phillips, Raymond Edwin	Indiana
Pieper, Raymond Aloysius	District of Columbia
Plante, Victor Eli	Indiana
Porter, Thomas Joseph	Indiana
Powers, Harold James	Michigan
Pralatowski, Frederick Michael	New York
Przybysz, Joseph Ferdinand	Indiana

Quertinmont, Gustave John	West Virginia
Quijano, Eduardo Antonio	Columbia, South America
Quinlan, Daniel Joseph	New York
Quinlan, Frank Raymond	Massachusetts
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Raab, John Michael	Indiana
Rademacher, Theodore Charles	Indiana
Rafferty, Aloysius Gerard	Pennsylvania
Railton, John Randolph	Illinois

Ramacciotti, Albert Louis	Nebraska
Reading, Almon Franklin	Michigan
Reading, Harvey Judd	Michigan
Ralston, John Francis	Illinois
Reagan, Charles Michael	Indiana
Reeve, Charles Burroughs	Indiana
Redmond, Walter Joseph	Canada
Regan, Frank Arthur	Ohio
Regan, James Joseph	Ohio
Reich, Felix Richard Jr.	Illinois
Reid, James Michael	Ohio
Reinhardt, George Jr.	Missouri
Remmes, Walter Augustine	Massachusetts
Rentschler, John Michael	Pennsylvania
Restrepo, Eliseo	Columbia, South America
Restrepo, Gabriel	Columbia, South America
Restrepo, Ramon	Columbia, South America
Reuss, John Louis	Indiana
Reynolds, Edward Joseph	Vermont
Reynolds, John Joseph	Vermont
Rhineford, Edward Anthony	Wisconsin
Rice, Rudolph Joseph	Pennsylvania
Richards, Thomas Daniel	Michigan
Richwine, Harry Allen	Indiana
Riley, Edward Clark	Nebraska
Rieder, Leo Peter	Indiana
Riley, John Urban	Massachusetts
Riley, Joseph Thomas	Michigan
Riley, Thomas Sylvester	West Virginia
Rivas, Humberto Maximilian	San Salvador, Central America
Roach, James Emmett	Illinois
Roberts, Godfrey Meyer	South Dakota
Robertson, Neil Vinson	Indiana
Robinson, William Henry	Indiana
Robinson, William Payne	Indiana
Roche, John Stephen	Ireland
Rodriguez, Rene	Santo Domingo, South America
Rohyans, Emmett Albert	Indiana
Rokosz, Boleslaus Joseph	Illinois
Romano, Emilio Carl	Illinois
Ronchetti, Peter John	Illinois
Rooney, Eugene Francis	Illinois

Rowe, Donald Marston	Indiana
Rubio, Rafael Garcia	Cuba
Rudolph, Simon Raymond	Pennsylvania
Russell, Leon Thomas	Michigan
Russell, Robert Marlow	Missouri
Ryan, Edward Christopher	Illinois
Ryan, Eugene Carleton	Ohio
Ryan, James Joseph	Tennessee
Ryan, James Joseph	New York
Ryan, Paul Joseph	Pennsylvania
Rydzewski, Francis Xavier	Illinois

Sackley, Rigney Joseph	Illinois
Saino, Felix Hugo	Tennessee
Sais, Enrique	Mexico
Salazar, Emilio Rufino	Cuba
Salmstein, Herbert Schrader	Illinois
Sanchez, Manuel Gonzalez	Cuba
Sandusky, Morris Aaron	Illinois
San Pedro, Jorge Rodriguez	Cuba
Scheibelhut, Edward John	Indiana
Schermann, Charles William	Illinois
Scherrer, Henry Paul	Colorado
Schinkoeth, Le Roy	Illinois
Schlipf, Albert Charles	Illinois
Schmitt, William Frank	New York
Schmucker, Walter Joseph	Texas
Schuber, John	Panama, Central America
Schubert, Carl Edward	Indiana
Schwartz, Richard Francis	Illinois
Schwarz, Joseph John	South Dakota
Scott, Harry Edward	Indiana
Scott, John Stanley	Washington
Seger, Charles Samuel	Pennsylvania
Sellick, Robert Bartley	Michigan
Seyler, Carl Joseph	Pennsylvania
Seyler, John Thomas	Pennsylvania
Shanahan, George William	Ohio
Shannon, Charles	Illinois
Sharp, Arthur Joseph	Oregon
Shea, John Cornelius	Indiana
Sherard, David Andrew	Illinois

Sheehan, Charles Aloysius	Massachusetts
Sheehan, Timothy Aloysius	Iowa
Sheetz, Russell Paul	Indiana
Shelby, Norris Paul	Indiana
Shepard, George Martin	New York
Simons, Roger Charles	Illinois
Simpson, Thomas Hayes	Oklahoma
Sim, Wilber Willace	Indiana
Singler, George Anton	Ohio
Sjoberg, Ralph Eric	Illinois
Slackford, Frederick John	Ohio
Slagel, Robert Wainwright	Illinois
Slane, Harold Charles	New York
Slane, James Joseph	New York
Smith, Delbert Davereux	Illinois
Smith, Frederick Donald	Illinois
Smith, Frederick Peter	Illinois
Smith, Joseph Francis	Ohio
Smith, Paul Joseph	Indiana
Snyder, Henry Bartholmew	Indiana
Snyder, Philip John	New York
Soldani, Clarence Mitchell	Oklahoma
Sommerer, Edwin Henry	Indiana
Sorensen, Charles Richard	Wisconsin
Spaulding, Thomas William	Kentucky
Spears, Leonard Francis	Ohio
Spencer, Lee Roy	Indiana
Spillane, John Owen	Pennsylvania
Springe, Henry Hampton	Kansas
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Stark, James Aloysius	Minnesota
Stark, John Timothy	Minnesota
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Steevens, Charles Andrew	Illinois
Stephan, Lawrence Sylvester	Indiana
Stephan, Leo Joseph	Illinois
Stickney, Harold James	Illinois
Strahan, William Speer	Michigan
Stronz, Clarence Eugene	New York
Sugrue, Stephen Joseph	Illinois
Sullivan, Daniel Joseph	Illinois

Sullivan, John Francis	Illinois
Sullivan, John Joseph Jr.,	New York
Sullivan, Lloyd Thadeus	Indiana
Summers, John Harrison	Illinois
Summerville, Frank Bond	Ohio
Susen, Benedict Paul	Illinois
Susen, William Henry	Illinois
Sweeney, Frank Henry	Illinois
Sweeney, James Leo	Pennsylvania
Sweet, Philip Murray	Illinois
Swift, Archibald Le Roy	Iowa
Swift, Francis Elmer	Iowa
Swift, Leonard John	Ohio
Swift, Paul Francis	Ohio
Switalski, Raymond Charles	Ohio
Sylvester, Edmond Eugene	Minnesota
Sylvester, Joseph Harry	Minnesota
Szczepanik, Alexander Alfred	New York

Teall, Lawrence Edmund	New York
Temple, Harold Dean	Illinois
Theogene, B	Wisconsin
Thimmes, Paul Ernwood	Ohio
Thompson, Paul Roderick	Missouri
Thomas, Walter Graham	Texas
Thornton, Maurice John	Indiana
Tierney, Timothy Joseph	Missouri
Tighe, John Forrest	Ohio
Tobass, Anthony John	Indiana
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Tomaszewski, Stanislaus Hilary	Indiana
Toth, Joseph Regol	Indiana
Trainor, Leo Joseph	Illinois
Treacy, James	Kansas
Trotter, Charles Hildreth	Canada
Trotter, Harold Rockwell	Canada
Trudelle, Matthew Eugene	Wisconsin
Truder, Thomas Vincent	New Mexico
Tschudi, Leo Louis	Iowa
Turner, William Wirt	District of Columbia
Tyner, Richard Howard	New York

Urquico, Jose	Philippine Islands
Usera, Vincente Jr.	Porto Rico

Valker, Leo Irwin	Minnesota
Vallez, Arthur Henry	Michigan
Vaudreuil, Harold Lionel George	Wisconsin
Van Vorhees, Harry Harrison	Illinois
Vaughan, Vincent De Paul	Indiana
Vitus, B.	Ohio
Voedisch, Hugo Henry	Indiana
Voelkers, John Joseph	Indiana
Vogel, Arthur Aloysius	Pennsylvania
Vogel, Leo Joseph	Pennsylvania
Vogt, Richard	Indiana
Voll, Bernard John	Ohio
Vurpillat, Francis Jennings	Indiana

Waage, George Billington	Illinois
Wafer, Dominic Francis	Illinois
Walker, William Brydon	Kansas
Wallace, James Gordon	New York
Walsh, Bernard Joseph	Illinois
Walsh, Francis Thomas	Illinois
Walsh, Herbert Mark	Illinois
Walsh, James Robert	Iowa
Walsh, Vincent Hugh	Montana
Walsh, William Michael	New York
Walter, Frederick Martin	Illinois
Walter, John Charles	Indiana
Walter, Martin Emmett	Illinois
Walter, Norman Louis	Illinois
Ward, Gilbert James	Illinois
Ward, Leo Richard	Iowa
Waring, John Nicholas	New York
Watson, Clair Kennedy	Wisconsin
Watson, Edward Dean	Indiana
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Weber, John Berg	Indiana
Weidner, Hubert Pancratius	Illinois

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Weiss, Joseph Francis	Illinois
Welch, John Aloysius	Indiana
Welch, Lawrence John	Indiana
Welch, Thomas Rowland	Illinois
Welsh, Frank Baird	Missouri
Welsh, James Aloysius	Illinois
Wentland, Francis Louis	Indiana
Weiss, Joseph Francis	Illinois
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Wills, Everett Ross	Indiana
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Witucki, Leo Andrew	Indiana
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Worman, Robert Thomas	Indiana
Wrape, Valda Aloysius	Missouri
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Yeager, Leslie Arnold	New York
Yerns, Peter Charles	New York
Young, Andrew Winifred	Wisconsin
Young, Harry Francis	Texas
Young, Jack Spaulding	Kentucky
Young, Thomas Brown	Kentucky
Yunker, Leo Joseph	Indiana

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Illinois	267	Vermont	4
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Indiana	217	Virginia	1
Kansas	12	West Virginia	6
Kentucky	17	Wisconsin	55
Massachusetts	15	Wyoming	4
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Minnesota	18	Canada	7
Missouri	31	Central America	7
Montana	5	Cuba	12
Nebraska	18	Ireland	4
New Jersey	13	Mexico	7
New Mexico	6	South America	8
New York	70	Spain	3
North Dakota	2		
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SEVENTY-FIRST ANNUAL COMMENCEMENT

June 12, 1915

The Degree of Doctor of Philosophy in Course was conferred on:

Regidius Marion Kaczmarek, A. B., M. S.

Thesis: "Studies in Viola (chiefly histological)."

The Degree of Doctor of Laws was conferred:

On a prelate of distinguished zeal and ability, whose successful labors in the field of Catholic education have made his name a noble tradition:

The Right Rev. John Carroll, Bishop of Helena, Montana.

On a man whose brilliant talent was reinforced with indomitable energy, whose fine leadership has been inspired by loyalty to his race and his creed, and whose devotion to the ideals of American citizenship is a noble example to the youth of America:

John Francis Fitzgerald, of Boston, Massachusetts.

On an orator of stirring eloquence and a patriot of clear vision and absolute devotion, whose loyalty to Church and Country has won for him the admiring love of his fellowmen:

Joseph Scott, of Los Angeles, California.

On a priest of the Congregation of St. Paul the Apostle, whose scientific achievements are as notable as his zeal for religion, and whose learning and eloquence have always been at the service of every good cause:

The Rev. Clarence Eugene Woodman, C. S. P., of Berkeley, California.

On a priest whose devotedness has found expression in a new form of Catholic journalism, and whose labors for the spread of truth has borne fruit in every section of America:

The Rev. John Noll, of Huntington, Indiana.

The Degree of Master of Arts was conferred on:

Walter Louis Clements, A. B., of Springfield, Kentucky.

Thesis: "Lincoln's Power of Logical Thought and Expression."

James Mortimer Riddle, Litt. B., of New Orleans, Louisiana.

Thesis: "The Political Status of Catholics in Colonial New York under the Dutch and English Rule."

Martin Emmett Walter, Ph. B., of Mount Carmel, Ill.

Thesis: "The Political Status of Catholics in Colonial Pennsylvania."

The Degree of Bachelor of Arts was conferred on:

Patrick Henry Dolan, Springfield, Illinois.
John Joseph Kroll, Chicago, Illinois.
Stanislaus Kuszynski, Chicago, Illinois.
John Margraf, Notre Dame, Indiana.
George Peter Schuster, Lancaster, Wisconsin.

The Degree of Bachelor of Letters was conferred on:

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Hilton Warner Goodwin, Weston, West Virginia.
Kerndt Michael Healy, Fort Dodge, Iowa.
Francis Bernard Remmes, Andover, Massachusetts.
Brother Walter, C. S. C., Notre Dame, Indiana.

The Degree of Bachelor of Philosophy was conferred on:

Norman Cletus Bartholomew, Bechtelsville, Penna.
Alvin Berger, Howe, Indiana.
Mark Lindsey Duncan, South Bend, Indiana.
Edward George Gushurst, Lead, South Dakota.
Arthur James Hayes, Chisholm, Minnesota.
Albert Anton Kuhle, Salem, South Dakota.

Emmett George Lenihan, Clarion, Iowa.
John Joseph McShane, Indianapolis, Indiana.
Edward Fyans Peil, Racine, Wisconsin.
Robert Leonard Roach, Muscatine, Iowa.
James Edward Sanford, Charlevoix, Michigan.
James Clovis Smith, Rochester, New York.

The Degree of Bachelor of Science in Biology was conferred on:

James Joseph Lynch, Laurens, Iowa.
Father Manuel Fernandez, O. P., Ponchatoula (Rosaryville), Louisiana.

The Degree of Bachelor of Science was conferred on:

Wilber Willace Sim, Nebraska City, Nebraska.
Thomas Joseph Shaughnessy, Chicago, Illinois.
Joseph William Stack, Jefferson, Ohio.
Richard Vogt, South Bend, Indiana.

The Degree of Bachelor of Science in Architecture was conferred on:

Vincent John Eck, Williamsport, Pennsylvania.
Harold Henry Munger, Perrysburg, Ohio.

The Degree of Civil Engineer was conferred on:

José Fernando Bracho, Mexico City, Mexico.
Frank Octave Bartel, Blue Earth, Minnesota.
Norman Hugh Ranstead, Chicago, Illinois.

The Degree of Mechanical Engineer was conferred on:

Keith Kenneth Jones, Missoula, Montana.
William Andrew Kelleher, Cosmopolis, Washington.
Joseph Stanley Pliska, Chicago, Illinois.

The Degree of Chemical Engineer was conferred on:

L. D. Keeslar, South Bend, Indiana.

The Degree of Electrical Engineer was conferred on:

Stephen Emmett Burns, Fort Wayne, Indiana.
Joseph Richard Farrell, Macedon, New York.
John Stanislaus Malkowski, Chicago, Illinois.

The Degree of Engineer of Mines was conferred on:
Ignacio Quintanilla, Mexico City, Mexico.

The Degree of Bachelor of Laws was conferred on:
John Timothy Andrew, Butte, Montana.
Robert Louis Byrnes, Elkader, Iowa.
Hardy Joseph Bush, Newark, New Jersey.
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Charles Patrick Somers, Springfield, Ohio.
Raymond John Sullivan, Macgregor, Iowa.

Henry Bartholomew Snyder, South Bend, Indiana.
Leo Louis Tschudi, Dubuque, Iowa.
March Forth Wells, Dowagiac, Michigan.

The Degree of Graduate in Pharmacy was conferred on:

Theodore Joseph Sauer, Elwood, Indiana.

Certificates for the Short Program in Electrical Engineering were conferred on:

Arthur Roderick Carmody, Shreveport, Louisiana.
William Edward Farren, Cleveland, Ohio.
Galvin Hudson, Memphis, Tenneesee.
Charles Vincent Meanwell, Ypsilanti, Michigan.
William James Shea, Chicago, Illinois.

Certificates for the Short Program in Mechanical Engineering were conferred on:

Santiago Aranibar, Peru, South America.
Arthur Roderick Carmody, Shreveport, Louisiana.
Francis Michael Carmody, Shreveport, Louisiana.
Dennis Timothy McCarthy, Indianapolis, Indiana.

Certificate for the Short Program in Architecture was conferred on:

Raymond Joseph Eichenlaub, Columbus, Ohio.

PRIZE MEDALS

The Quan Gold Medal, presented by the late William J. Quan, of Chicago, for the student having the best record in the Classical Program, Senior Year, and a money prize of twenty-five dollars, gift of Mr. Henry Quan in memory of his deceased father, was awarded to George Peter Schuster, Lancaster, Wisconsin.

The Martin J. McCue Gold Medal, presented by Mr. Warren A. Cartier, Civil Engineer, of the class of '77, for the best record for four years in the Civil

Engineering program, was awarded to José Fernando Bracho, Mexico City, Mexico.

The Dockweiler Gold Medal for Philosophy, founded in memory of his deceased father by Mr. Isidore Dockweiler of Los Angeles, California, for the best essay on some philosophical theme, Senior Year, was awarded to George Peter Schuster, Lancaster, Wisconsin.

Thesis: "The Psychological Crux—Matter and Form."

The Breen Gold Medal for Oratory, presentd by the Honorable William P. Breen, of the class of '77, was awarded to Joseph Clovis Smith, of Rochester, New York.

The Barry Elocution Gold Medal, presented by the Honorable P. T. Barry, of Chicago, was awarded to William Cyril Henry, Chicago, Illinois.

The Meehan Gold Medal, the gift of Mrs. Eleanor Meehan, of Covington, Kentucky, for the best essay in English (Senior), was awarded to George Peter Schuster, Lancaster, Wisconsin. *Essay:* "The Present Condition of American Catholic Literature."

Medals for Debating were awarded to Timothy Patrick Galvin, Pierceton, Indiana; Emmett George Lenihan, Clarion, Iowa; Joseph Clovis Smith, Rochester, New York; Patrick Henry Dolan, Springfield, Illinois; George Peter Schuster, Lancaster, Wisconsin; Ernest Philip LaJoie, Saginaw, Michigan.

Money Prizes for Debating Work were awarded as follows: Twenty dollars to Timothy Patrick Galvin, Pierceton, Indiana; fifteen dollars to Emmett George Lenihan, Clarion, Iowa; ten dollars to Joseph Clovis Smith, Rochester, New York.

Ten Dollars in Gold for Junior Oratory, presented by Mr. James V. O'Donnell, of the class of '89, was awarded to Timothy Patrick Galvin, Pierceton, Indiana.

Ten Dollars in Gold for Sophomore Oratory, presented by Mr. John S. Hummer, of the class of '91, was awarded to William Cyril Henry, Chicago, Illinois.

Ten Dollars in Gold for Freshman Oratory, presented by Mr. Hugh O'Neill, of the class of '91, was awarded to Matthew Aloysius Coyle, Madison, Wisconsin.

PREPARATORY SCHOOL.

The Gold Medal for Christian Doctrine, First Course, was awarded to Francis Duffy Watson, Lafayette, Indiana.

The Gold Medal for Christian Doctrine, Second Course, was awarded to John Henry Callaghan, Cleveland, Ohio.

The Mason Medal, donated by Mr. George Mason, of Chicago, to the student in the Preparatory School whose scholastic record has been the best during the school year, was conferred on Francis Otis Wood, Albuquerque, New Mexico.

Commercial High School Diplomas were conferred on: Emil Alexius Besten, Louisville, Kentucky; Dennis William Kelly, Devil's Lake, North Dakota; Ralph Anthony Reitz, Evansville, Indiana.

The Commercial Medal given to the student who has attained the best record in Commercial subjects for the school year was awarded to Dennis William Kelly, Devil's Lake, North Dakota.

The Joseph A. Lyons Gold Medal for Elocution, was awarded to William C. Havey, Indianapolis, Indiana.

Ten Dollars in Gold for Preparatory Oratory, presented by Mr. Clement C. Mitchell of the class of '04, was awarded to Francis Butler, Belvidere, Illinois.

The O'Brien Gold Medal for the best record in Preparatory Latin, the gift of the Rev. Terence A. O'Brien of Chicago, was awarded to Francis Butler, Belvidere, Illinois.

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It is desired that every graduate receive a copy of the Bulletin. The Faculty will therefore consider it a favor to be notified in case an Alumnus changes his address.

On application to the President, Bulletins will be sent to all who are interested in the work of the University.

Series XII. Number IV

BULLETIN

OF THE

University of Notre Dame

NOTRE DAME, INDIANA

GENERAL CATALOGUE

1916-1917

PUBLISHED QUARTERLY BY THE UNIVERSITY

THE UNIVERSITY PRESS
APRIL, 1917

Entered at the Post Office, Notre Dame, Indiana, as second class matter,
July 17, 1905

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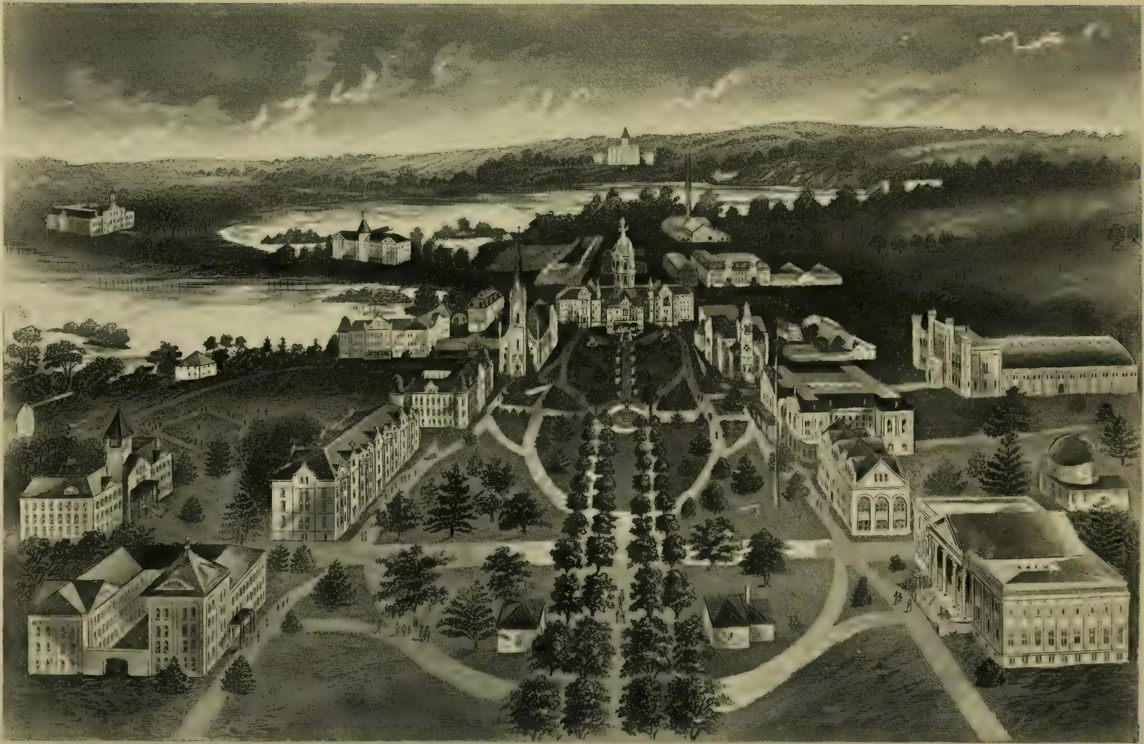

UNIVERSITY OF NOTRE DAME
Notre Dame, Indiana

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DIRECTORY OF THE UNIVERSITY

The FACULTY—Address:
THE UNIVERSITY OF NOTRE DAME,
Notre Dame, Indiana.

The STUDENTS—Address:
As for the Faculty, except that the name of the Hall in which the student lives should be added.

There are at the University a Post Office, a Telegraph Office, a Long Distance Telephone, and an Express Office.

The University is two miles from the city of South Bend, Indiana, and about eighty miles east of Chicago. The New York Central, the Grand Trunk, the Vandalia, the Indiana, Illinois & Iowa, the Chicago and Indiana Southern, and the Michigan Central Railways run directly into South Bend. A trolley line runs cars from South Bend to the University every fifteen minutes.

The Latitude of the University is 41 degrees, 43 minutes, and 12.7 seconds North, and 86 degrees, 14 minutes and 19.3 seconds West of Greenwich.

The elevation is about 750 feet above the sea.

From this it is clear that the location is favorable for a healthful climate where students may engage in vigorous mental work without too great fatigue or danger to health.

CALENDAR FOR 1917-1918

	1917	
September	12	Entrance Examinations and Examinations of Conditioned Students in the Preparatory School. Registration.
	13	Preparatory Schools Open.
	19	Entrance Examinations and Examinations of Conditioned Students in the Colleges. Registration.
	20	Colleges Open.
	21	Reading of University Regulations in all the Halls.
October	13	Founder's Day.
	28	Annual Retreat begins in the evening.
November	1	Feast of All Saints. No Classes.
	19, 21	Mid-Term Examinations.
	29	Thanksgiving Day. No Classes.
December	5	The William P. Breen Medal Orations.
	8	Feast of the Immaculate Conception. No Classes.
	18, 19	Written Test in all Classes.
	19	Christmas Vacation Begins at Noon.
	1918	
January	7	Classes Resume at Noon.
	28, 30	Term Examinations.
	31	Second Term Begins.
February	22	Washington's Birthday. No Classes. Presentation of Flag by the Senior Class.
March	17	St. Patrick's Day.
	19	St. Joseph's Day.
	31	Easter. Easter Vacation—March 27, Noon, to April 3, Noon.
April	15, 17	Mid-Term Examinations.
May	20	Latest Date for Handing in Prize Essays and Graduating Theses in all the Colleges.
	30	Decoration Day. No Classes.
June	1	The Patrick T. Barry Medal Recitations. The Joseph A. Lyons Medal Recitations.
	3, 4, 5	Examinations of Candidates for Graduation.
	5, 6	Examinations in Preparatory Schools.
	9	Baccalaureate Sermon. Blessing and Hoisting of Senior Flag. Meeting of the Alumni.
	10	Commencement. Bachelors' Orations, 10:00 a.m. Commencement Address and Graduation Exercises, 8:00 p. m.
	11, 12	Examinations in the Colleges.

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* W. A. Johns will be Dean of the Department of Agriculture, beginning September, 1917.

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UNIVERSITY OF NOTRE DAME

The University of Notre Dame was founded in the year 1842 by the Very Reverend Edward Sorin, the late Superior General of the Congregation of Holy Cross. In an act approved January 15, 1844, the Legislature of Indiana gave the University power to grant degrees. The beginning of this act is:.

"*Be it enacted by the General Assembly of the State of Indiana*, that Edward Frederick Sorin, Francis Lewis Cointet, Theophilus Jerome Marivault, Francis Gouesse and their associates and successors in office be, and are hereby constituted and declared to be, a body, corporate and politic, by the name and style of the 'University of Notre Dame du Lac,' and by that name shall have perpetual succession, with full power and authority to confer and grant, or cause to be conferred and granted, such degrees and diplomas in the liberal arts and sciences, and in law and medicine, as are usually conferred and granted in other universities in the United States, provided, however, that no degree shall be conferred and diplomas granted, except to students who have acquired the same proficiency in the liberal arts and sciences, and in law and medicine, as is customary in other universities in the United States."

UNIVERSITY BUILDINGS

THE ADMINISTRATION BUILDING

The dimensions of this building are 320 by 155 feet; it is five stories, 207 feet in height, and surmounted by a dome. The executive offices, two study-halls, some dormitories and class rooms and the dining-rooms are in this building. This building, like all the others of the University is lighted by electricity and gas, and heated by steam. The corridors of the first floor are decorated with mural paintings by Gregori, representing the life of the Discoverer of America.

THE CHURCH

The Church of the Sacred Heart is 275 by 120 feet in ground dimension and 125 in height from the floor to the roof ridge. The interior is decorated by Gregori, and the architecture is Gothic. There is a large crypt and many chapels. In the tower is a chime of 32 bells and the great six-ton chief bell.

THE LIBRARY

The new Library of the University of Notre Dame, recently completed, is a building of 152 feet frontage and 108 feet depth. In the planning of this library, no efforts have been spared to apply all the latest and most approved ideas in library construction.

The main floor makes provision for two large reading rooms, each 108 feet by 32 feet; one on the south side for reference, the other on the north side for newspapers and periodicals. It may be stated that in the latter case ample space is provided for the accommodation of the rapidly growing School of Journalism.

In the reference room, provision is made for 12,000 volumes, and immediately adjoining this is a large room containing the bibliographical collection. Here also are to be found two sixty-drawer cabinets for subject card bibliography.

On entering the building, the first thing that meets the eye is a stately delivery hall, sixty feet by thirty feet, placed midway between the two reading rooms and guarding the entrances to them. The catalogue room is conveniently located to the rear of the delivery desk so that patrons who wish to use the loan department may do so without disturbing the students in the reading rooms engaged in serious reference work. This room contains 1080 drawers with a capacity of over 1,000,000 cards. In the stacks alone the building can accommodate over 600,000 volumes. The University's collection is at present between 90,000 and 100,000 volumes.

Besides the general collection, there is a number of special libraries in this building. The Edward Lee Green Library of Botany comprises 4,000 choice and rare volumes of botanical works, including many first editions and books now out of print. This library is for the use of advanced students in Botany. The Dr. John A. Zahm Dante Collection contains works on the father of Italian Literature in forty languages, and is one of the most complete in the United States.

The reading rooms can conveniently accommodate one hundred students each. In addition to this, the cubicles in the stacks provide for ninety more. There are also facilities for doing special work in the seminars located on the upper floor. Another feature is the rooms provided for the use of collegiate debaters. In fact, nothing has been omitted in equipment which will give the greatest possible efficiency to the library.

WASHINGTON HALL

This hall is 170 feet in length, 100 feet in width, and about 100 feet in height. It contains the rooms of the Department of Music, the club rooms for Brownson and Carroll Halls, and the University Theatre. The theatre is elaborately equipped with stage settings. It will seat 1,200 persons. Lectures by men eminent in public and professional life are given here. Concerts and plays by professional companies are also presented in this theatre. The dramatic clubs of the University present several plays annually.

SCIENCE HALL

is situated a few steps south of Washington Hall. Its dimensions are 105 by 131 feet, and it is three stories in height. A large central space, the full height of the building, is occupied by a museum containing mineral fossil and biological specimens. The departments of Physics, Mathematics, Medicine, Botany and Biology have recitation rooms and laboratories in this building. The equipment for each of these departments is extensive and complete. Description of the equipment will be found later in this bulletin.

THE MUSEUM

connected with the departments named above, is well arranged for convenience of study. The zoological collection on the second floor at present fills sixteen large cases and represents typical forms of all the orders and genera of vertebrate and invertebrate animals. A large collection of representative vertebrate skeletons forms a considerable part of the museum.

Facilities for the publication of research on subjects of natural history are afforded in the pages of the *American Midland Naturalist*, which appears bi-monthly from the laboratory of botany at the University.

The collections in Geology and Mineralogy occupy the first floor These collections are arranged in a series of cases on each side of the building. In one series is a carefully classified collection of minerals and ores. The opposite series of cases contains a large geological collection; some of the specimens here are of the rarest fossil remains of animal and plant life.

CHEMISTRY HALL

The new Chemistry Hall is a three-story building directly south of the Gymnasium and faces west. It is 139 x 52 with a rear extension 77 x 66. The top floor is devoted to the large laboratories of Inorganic, Qualitative, and Organic Chemistry together with private laboratories, Electro-analysis laboratory, research rooms and a commodious Stock Room for immediate needs. The second floor is occupied by the Department of Pharmacy and Quantitative Analysis together with two large lecture rooms and two small class rooms. On this floor also are the Drug Store, the laboratories for Physical and Technical Analysis, the Museum and the Library. The basement is devoted to the Department of Mining, Agricultural and Industrial Chemistry together with space for Constant Temperature work, a repair shop, a Reserve Stock Room, two class rooms and suction and blast machinery. All the laboratories are fully equipped.

ENGINEERING HALL

This building is situated in the southern section of the campus and is a large two-story brick structure, well lighted and heated. The lower floor contains the mechanical laboratory, machine shop, blacksmith shop and foundry. The second floor provides the shop for wood-work and also contains a well lighted drawing room where students in designing may consult complete workings of the best steam engines and pumps to be found on the market. In this building are likewise the dynamo laboratory, designing room and recitation rooms of the Electrical Engineering department.

THE OBSERVATORY

This building is located near Science Hall and is designed for an equatorial telescope and for a transit or meridian circle. The equatorial telescope now in the building is intended for students of astronomy, and is in use whenever favorable weather permits.

RESIDENCE HALLS

SORIN HALL

This building is 144 feet in length, with two wings 121 feet in depth. It has a basement and three high stories, and contains 101 private rooms for advanced students; there are baths and toilets on each floor. These rooms are furnished, and students of full Senior, or Junior standing in any of the Colleges may be lodged here. On the first floor there is a chapel, a law lecture room and a law library. The building is lighted with electricity and heated with steam. In the basement are the recreation and reading rooms.

CORBY HALL

Corby Hall is another residence building. It has three stories and a basement, with baths and toilets on each floor, and is 240 feet in length. There are 125 private rooms for Sophomores, with recreation rooms and a chapel. The building is lighted with electricity and gas and heated with steam.

WALSH HALL

This newest dormitory building is situated south of Sorin, fronting the quadrangle. Its dimensions are 230 by 41 feet. It faces east and all the front rooms are made up of suites, each consisting of a commodius study room, flanked on either side by a bedroom. Attached to each suite is a private bath and toilet. Each room is supplied with hot and cold water. The rear rooms are singles and the general toilet and bath rooms are of hollow, fire-proof tile, walls and ceilings covered with wire lath and plaster, making practically a fire-proof building. It is equipped with a distinct system of standpipes for fighting fire. The entire corridor floors are built of reinforced concrete, covered with Roman ceramic mosaics. In finish and equipment Walsh Hall is believed to be the best college dormitory building in America. It embraces three stories besides the admirable basement and attic, and it is capable of accommodaing a hundred and fifty students.

BADIN HALL

Badin Hall is located in the southwestern portion of the campus and is devoted chiefly to living and study rooms. In this building there are one hundred and thirty rooms in which the Freshmen live. It has recently been remodeled and enlarged and is one of the most acceptable and up-to-date dormitories on the campus. It contains the college restaurant also.

BROWNSON HALL

Brownson Hall occupies the east wing of the Administration Building and contains the living and study quarters of students of seventeen years of age and upwards. There is a common study hall, a common lavatory, and two large sleeping rooms in which each student has an alcove curtained to secure a personal privacy. Experience shows that the discipline of these common rooms works admirable effects on students who have not yet contracted solid habits of study.

CARROLL HALL

Carroll Hall is in the west wing of the Administration Building. It is in all respects similar to Brownson Hall, except that it is intended for younger students. The regulations are more particularly adapted to their age and scholastic attainments. Preparatory students between the ages of thirteen and seventeen years are placed in this hall.

THE INFIRMARY

This building, 200 feet by 45 feet in ground measurement and three stories in height, contains rooms for the use of students during illness. The sick are cared for by Sisters of the Holy Cross, and the University physician visits them daily when necessary.

THE GYMNASIUM

The Gymnasium is a building 220 by 100 on the ground. The track-hall is now 100 by 180 feet on the ground. It is used for indoor meets, winter baseball practice, basketball and military drill. The gymnasium hall is 100 by 40 feet and is furnished with a full set of apparatus; below that are the offices, dressing rooms and shower baths. Friends of the University and the alumni contributed generously to the fund for rebuilding the gymnasium.

Cartier Field is an enclosed field for athletic games. There is a permanent grandstand near the baseball diamond and the running track, and a portable stand near the football rectangle. The field contains ten acres of ground, and is a gift to the University from Mr. Warren A. Cartier, C. E., of the class of '87.

OTHER BUILDINGS

There are numerous other large buildings connected with the University: Holy Cross Hall, Dujarie Hall, the Community House, the Presbytery, and Saint Edward Hall, the last named being a school for children under the age of thirteen, in care of the Sisters of the Holy Cross.

STUDENT EMPLOYMENT

A limited number of young men may secure employment as student waiters. These are allowed two hundred dollars a year on the cost of board, room and tuition. The conditions for appointment as student waiter are (1) the completion of the full high school course; and (2) a letter of recommendation from his pastor. The waiting in no wise interferes with the student's work and all the educational advantages are open to him. On payment of the difference between their allowance of $200 a year and the regular cost of board, tuition and lodging student waiters are placed in the particular residence hall to which their class standing entitles them.

SYSTEM OF INSTRUCTION

The entire plan of studies is based on the modified elective system. The student is free to select his own curriculum conformably to his natural liking, the career in life he may have in view, or the determinate intellectual bent developed during his secondary school years; but, though he is free to elect his own studies, he has not, however, unlimited freedom in this respect. The principle of general election is modified. Lest the young Freshman in his inexperience choose unwisely, he is aided in making his choice of studies by being permitted to select from among a number of parallel programs leading to baccalaureate degrees. Twenty programs are open for his choice in the Colleges, each embracing courses which, in the opinion of the Faculty, contribute best to cultural, scientific or professional knowledge. These programs are, in some cases, made elastic by the introduction of elective courses, especially in the Junior and Senior years. Students who wish to spend a limited time in study and can not complete all the courses in a program for a degree may register as special students and elect any course for which their preparation has fitted them.

The hours scheduled in the different programs are credit hours based on the average amount of time required for preparation of recitations. One hour of recitation is regarded as the equivalent of at least two hours of laboratory work. The minimum number of credit hours which a student must carry, is sixteen, the maximum number which he may ordinarily carry is twenty. The number is not the same in all the Colleges. Students who wish to take more work than is indicated by the maximum number for a particular College must apply to the Faculty by formal petition for permission to do so. This will not be granted unless a student is carrying his regular work with distinction.

REGULATIONS GOVERNING ADMISSION TO THE COLLEGES

Candidates who wish to enter any of the Colleges must present evidence, either by examination or by a properly attested certificate, of ability to enter on the courses of the Freshman year. Sixteen units are required for entrance. The units, required and elective, are given in the table on page 23.

Examinations in all the subjects required for admission to the University are held at Notre Dame in September, the beginning of the Fall Term, and in February, the beginning of the Spring Term.

A candidate failing to pass satisfactory examinations in one or more of the subjects required for admission to any college program may, at the discretion of the Faculty, be admitted to his class as a conditioned student, to make up his deficiency by extra study *within one school year.* Only when the conditions are removed will the student be admitted to full standing in his class.

Students who have completed a four year course in High Schools or Preparatory Schools of recognized standing will be admitted without examination to the Freshman year of any program to which their preparatory studies entitle them.

Candidates for admission to advanced standing who are required to take examinations must pass, *in addition* to the usual entrance examinations, an examination in the work already done by the classes they desire to enter. The additional subjects may be found in the several programs of studies described later in this bulletin.

Applicants for advanced standing who present certificates from other colleges or universities may be received at the discretion of the Faculty with or without examination as regards particular cases.

No student will be admitted to any course of the Senior year until all conditions have been cancelled.

Catholic students are required to take the prescribed courses in Evidences of Religion.

It is recommended that Latin, modern language or history be taken as electives under the College of Letters; that modern languages, or science be taken

ENTRANCE REQUIREMENTS FOR VARIOUS COLLEGES IN SUBJECTS AND UNITS

COLLEGES

SUBJECTS	ARTS AND LETTERS*		SCIENCE§	ENGINEERING	ARCHITECTURE	LAW
	Units	Units	Units	Units	Units	Units
English	4	4	4	4	4	4
Latin	4	2 or 4	2 or 2			2 or 4
Greek	3					
French, German or Spanish		2†		2	2	2†
History	2	2	2	2	2	2
Algebra	1	1	1½	1½	1½	1
Geometry	1	1	1½	1½	1½	1
Trigonometry				½		
Chemistry	‡	‡	1	1	1	‡
Physics			1	1	1	
Botany, Physiology						
Zoology, Physiography						
Drawing						
Elective		3	3	2½	3	3
Total	16	16	16	16	16	16

* Including Departments of Letters, History and Economics, Journalism and Commerce.

† Four units of Language required. ‡ For admission to the College of Arts and Letters and Law one unit of Science is required. For admission to the Department of Commerce two units of Modern Language are required. Latin is not required, thus giving five electives.

§ Including Pharmacy, Agriculture and Pre-Medical Programs.

as electives under the Colleges of Science, Engineering and Architecture; that French be the language chosen for Architecture; that language and history be taken as electives for the College of Law.

There are classes specially arranged for those who do not present credits for Trigonometry, Elementary Chemistry and Physics; the same holds true for elementary courses in Ancient and Modern Languages.

DEGREES

Degrees are conferred only on regular students who have satisfied the full entrance requirements and have completed satisfactorily the courses prescribed. One hundred and twenty-eight semester hours are required as a minimum for graduation from any of the four-year programs of study. Written theses and formal examinations are demanded of all candidates for degrees. One full scholastic year of resident study is absolutely required.

BACHELORS

The courses of study offered to candidates for the degree of Bachelor extended by fixed programs throughout the four scholastic years.

The College of Arts and Letters offers six degrees:

- Bachelor of Arts (A. B.);
- Bachelor of Letters (Litt. B.);
- Bachelor of Philosophy (Ph. B.);
- Bachelor of Philosophy in Journalism (Ph. B. in Journ.);
- Bachelor of Philosophy in Commerce (Ph. B. in Commerce).
- Bachelor of Philosophy in Foreign Commerce. (Ph. B. in For. Com.)

The College of Science offers seven degrees:
Bachelor of Science (B. S.);
Bachelor of Science in Biology (B. S. in Biol);
Bachelor of Science in Chemistry (B. S. Chem.);
Bachelor of Science in Pharmacy (B. S. in Ph);
Pharmaceutical Chemist (Ph. C.);
Bachelor of Science in Agriculture (B. S. A.);
Bachelor of Science in Medicine (B. S. in Med.).

The College of Engineering offers five degrees:
Civil Engineer (C. E.);
Mechanical Engineer (M. E.);
Electrical Engineer (E. E.);
Mining Engineer (E. M.);
Chemical Engineer (Ch. E.).

The College of Architectue offers two degrees:
Bachelor of Architecture (B. Arch.);
Bachelor of Architectural Engineering (B. A. E.).

The College of Law offers the degree:
Bachelor of Laws (LL. B.).

In the College of Music one degree is offered:
Bachelor of Music (B. M.).

In order to obtain this degree the candidate must have studied music in the University for one complete year. He must have a thorough theoretical knowledge of four specified instruments and a practical mastery of one of them. He shall pass a written examination in harmony, counter point and composition, and he must submit to the examiner two original compositions: (*a*) a fugue for full orchestra, or for four voices, with independent orchestral accompaniment: (b) a composition in the free form (sonata or rondo) for pianoforte, or a trio (pianoforte, violin and violincello.)

The degree of Bachelor will not be conferred unless the candidate shall have been in residence for one complete scholastic year in his *Senior* year of study.

MASTERS

The degree of Master is open to students who have received the degree of Bachelor from Notre Dame or from some other college in good standing, and who make application to the Faculty Committee on Graduate Study for the privilege of pursuing advanced work. All work must be approved by this Committee. One year of residence, at least, is required of candidates who have received their Bachelor's degree at another college. Those who have received their Bachelor's degree from Notre Dame, may, in some cases to be determined by the Committee, obtain the Master's degree for work done *in absentia** One major and one or two minor courses will constitute the curriculum, forming a consistent coordinated plan of advanced work pursued with some definite aim. On completion of the required work the candidate must pass a satisfactory examination in writing, under the professors who give his subjects of instruction. The candidate for this degree must also write a dissertation of notable merit on some topic connected with his major subject, the thesis to contain in the minimum five thousand words. The subject of the thesis must be announced to the Committee by December 1, and submitted for examination by May 15. Five printed or typewritten copies of the thesis must be presented to the University to be placed in the library. The fee for examination of work done *in absentia* is twenty-five dollars. The fee for this degree is fixed at fifteen dollars.

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* No degree is conferred *in honorem* except the degree of Doctor of Laws (LL. D.)

DOCTOR OF PHILOSOPHY

Three years must be spent by the candidate in University work before the degree of Doctor shall be conferred,—two of these must be spent at Notre Dame and one may be passed away from the University on approval of the Faculty Committee on Graduate Study. The candidate is required to pass satisfactorily examinations in French and German on entrance. The work for the degree shall consist of one major and two minor courses of instruction approved by the Committee. Research study shall form the most important part of the candidate's work. On completion of his work the candidate must pass minute examinations on the three subjects of his curriculum and must defend his dissertation before the Faculty. The thesis must be printed and one hundred and fifty copies presented to the University. A copy of the thesis must be handed to the Committee one month before the examination. The degree will not be conferred for merely faithful work, nor for miscellaneous study, but for original research and for high attainment in one branch of study. The fee for this degree is fixed at twenty-five dollars.

SPECIAL STUDENTS

Students who do not wish to become candidates for a degree by following the prescribed courses of any program may register as special students and attend any of the courses of instruction for which their previous academic training has fitted them. Such special students are governed by the same regulations and discipline as the other undergraduates. They are required to pass the regular examinations in whatever courses they may pursue. In exceptional cases men of mature age, who have been out of school or college for several years, but whose training in practical affairs has been sufficiently educative, will be accepted as special students by satisfying the Faculty of their ability to pursue with profit any course of instruction.

On leaving the University special students may receive on application certificates stating their proficiency in the classes they have followed.

Students who do not take the regular four year program in Commerce, Pharmacy, Agriculture, Architecture, Electrical and Mechanical Engineering, but who complete the two year programs of study will receive certificates for the work done. The conditions for receiving these Certificates are given later on in this bulletin.

SCHOLARSHIPS

The University has at present only four foundations which yield revenues for the support and tuition of five students annually. Assignment of these scholarships is made under restrictions indicated with each gift. No student will be continued in the enjoyment of a scholarship whose superiority in college work is not clearly indicated in his first year of residence. Nor will a student who has incurred serious censure by breach of the regulations of the University be considered as a candidate for a scholarship.

It is a matter of great regret that the lack of endowment makes it impossible for the University to assist a greater number of deserving students who are not able to pay the charges of board and tuition. Under conditions indicated on page 20 of this bulletin a limited number of student-waiters can be received at reduced rates. Certain clerkships in the University offices and positions in the library are also open to worthy young men. Information regarding the assignment of these places will be furnished by the Registrar. The University is doing all in its power to assist students in narrow circumstances. The friends of Notre Dame are asked to aid in this work.

THE JOHNSON SCHOLARSHIP

In 1899 Dr. Edward Johnson, of Watertown, Wisconsin, gave a fund of four thousand dollars, the income of which aids in the support of one student annually. By the terms of the gift assignment is made only to a student who intends to enter the priesthood.

THE CARROLL SCHOLARSHIP

The Rev. Thomas Carroll, of Oil City, Pennsylvania, bequeathed five thousand dollars in 1899. The terms of the bequest specify that the income shall be used to aid a student from Oil City.

THE FORD SCHOLARSHIP

In 1900 Mrs. Catherine Ford, of Chicago, gave to the University certain properties for the maintenance of worthy students. The income arising from this gift now supports fully two students annually. By the wish of the donor nomination for these scholarships are made from St. Jarlath's parish, Chicago.

THE PATRICK O'BRIEN SCHOLARSHIP

When Mr. Patrick O'Brien, a distinguished citizen of South Bend, Indiana, died in August, 1913, the family, interpreting his oft-expressed wish, established a memorial scholarship for which college men and graduates are eligible. This scholarship may be administered as two half-scholarships. There are no conditions attached to it except that the holder be of collegiate standing at least.

PRIZES

The following prizes and honors within the gift of the University are awarded annually under conditions named below. Any of these prizes may be withheld by the Faculty if the student incur serious censure for violating any of the regulations of the University.

THE QUAN MEDAL FOR CLASSICS

A gold medal is yearly given to the student who has obtained the best record in the Senior year of the Classical Program. The medal is the gift of Mr. William J. Quan, of Chicago, and is awarded only on condition that the record of the student is notably good in all the courses of instruction prescribed for the Senior year. A money prize of twenty-five dollars has recently been attached to this medal by Mr. Henry Quan, Jr., in memory of his father.

THE MASON MEDAL

A gold medal, the gift of Mr. George Mason, of Chicago, is awarded each year to the student of Carroll Hall whose scholastic record is superior to that of his fellows. Observance of the University regulations counts in the award. The prize may be withheld if in the opinion of the Faculty the record of the student has not reached a high standard.

THE MEEHAN MEDAL FOR ENGLISH ESSAYS

A gold medal, the gift of Mrs. Eleanor Meehan, of Covington, Ky., is awarded every year to the Senior (undergraduate) who presents the best essay in English. Essays offered in competition may be on any subject approved by the head of the Department of English. The essay must be notably meritorious.

THE BREEN MEDAL FOR ORATORY

This prize is the gift of the Honorable William P. Breen, of the Class of '77, and is annually awarded to the student who excels in oratory. The award is made by a committee of three selected by the Faculty and after a public competition. The winner represents the University in the Indiana State Oratorical Contest held the third Friday in every February. No student may receive the Breen Medal more than once, but the winner of this prize may compete again for the honor of representing the University in the State Contest.

There is also a ten-dollar prize offered to the winners of the Freshman, Sophomore, Junior and Preparatory contests in oratory.

THE MATRIN J. McCUE MEDAL FOR CIVIL ENGINEERING

The McCue Medal for Civil Enginereing, presented by Mr. Warren A. Cartier, Civil Engineer, of the Class of '87, is awarded to the student of the Department of Civil Engineering who has obtained the best record in all the courses prescribed in the program. The medal is awarded only when the student's record has attained a fixed standard. In computing the grades the courses in mathematics count fifty per cent. Only students who have been in residence for four full years are eligible to compete for this prize.

THE JOSE CAPARO MEDAL FOR ELECTRICAL ENGINEERING

This medal, founded in memory of his deceased father, by José Caparo, of the class of '08, is awarded to the student of the Department of Electrical Engineering who has obtained the best record in all the courses prescribed in the four year program of Electrical Engineering. The medal is awarded only when the student's record has attained a fixed standard.

THE MEDALS FOR ELOCUTION

Two prizes known as the Joseph A. Lyons Medal and the Patrick T. Barry Medal are awarded every year for excellence in elocution. The award is made after competition in pubilc. One of the medals was founded in memory of Professor Joseph A. Lyons, of the Class of '62, who served the University as Professor of Elocution and Oratory from 1872 to 1888. The other is a gift of Mr. Patrick T. Barry of Chicago.

THE DOCKWEILER MEDAL FOR PHILOSOPHY

The Dockweiler Medal for Philosophy founded by Mr. Isidore B. Dockweiler of Los Angeles, California, in memory of his deceased father, Henry Dockweiler, is awarded to the student of the College of Art and Letters, Senior year, who submits the best essay on some philosophical theme. The medal will not be awarded unless the essay attains a certain standard of excellence.

THE MONSIGNOR O'BRIEN PRIZE

This prize, founded in honor of the Right Rev. Monsignor Frank A. O'Brien, LL. D., of Kalamazoo, Michigan, is a gold medal awarded for the best essay on any topic dealing with the history of the Northwest Territory.

THE PRIZE FOR PUBLIC DEBATING

A prize of fifty dollars is awarded to three students, who, in the opinion of a committee of judges, usually from without the Faculty, excel in debating. The award is made after a competition in public. A debating medal is awarded to each of the students who represent the University in the principal intercollegiate debates of the year.

DISCIPLINE

Official reports of each student's class standing will be sent to parents and guardians quarterly.

The Faculty maintains that an education which gives little attention to the development of the moral part of a youth's character is pernicious, and that it is impossible to bring about this development where students are granted absolute relaxation from all Faculty government while outside the class-room. A young man must learn obedience to law by the actual practice of obedience. Moreover, the quiet and concentration of mind that are needed for college work are not obtained except where discipline exists. Therefore, certain regulations, shown by experience to be salutary, are enforced at the University.

The campus includes more than a square mile of park, and students are expected to take their recreation on the campus rather than in loitering about the city. College life lasts only four years as a rule and the special charm of it lies in the points wherein it differs from the life of the city rather than in the points wherein it resembles that life. These are the years during which young men dream dreams and see visions. These are the years during which the beautiful and the abiding friendships of after life are formed and cultivated. It is almost a sacrilege to cheapen and vulgarize a college by reducing it to the level of a mere class-room exercise and by stripping it of all that makes it distinctive and memorable in the experience of youth. Therefore, students of Notre Dame are expected to find their chief interest on the campus and in the companionship of college friends, rather than in the distractions of the city. Of course no attempt is made to shut out the life of the town altogether, but the question is regulated by wise rules which are made known to the student at the beginning of the year, and which the young men themselves frankly approve and loyally keep.

There are certain offenses which inevitably involve separation of the student from the University. These are: habitual disobedience to college regulations, cheating in examinations, the use of intoxicating liquors, any form of impurity, the use of profane or obscene language, and habitual laziness as regards study. In cases of suspension or expulsion tuition fees are not returned.

Tobacco is not forbidden to students of seventeen years of age and upwards, but the use of cigarettes is strictly prohibited.

Although students of all religious denominations are welcomed and are made to feel as much at home as they would be in the bosom of their own family, and although both the Faculty and the students avoid controversy or anything else that could wound the most delicate susceptibilities of our non-Catholic friends, nevertheless it ought to be frankly stated that the University is in the fullest sense a Catholic institution, and while no effort is made at proselytism, all students, as a matter of college regulation and discipline, are required to attend divine services in the University church at stated times.

Undue attention to athletics at the expense of study is not permitted, but students are encouraged to take part in manly sports, for which the large campus, the spacious gymnasium, and the general condition of student life at Notre Dame affords special advantages. All athletic associations among the students are strictly forbidden to countenance anything that savors of professionalism. The whole question of athletics is governed by a Faculty board of control which will be guided in its rulings by the regulations adopted by the leading colleges of the country. The Vice-President of the University and six members of the Faculty compose this board, and they reserve the right to a final decision on all questions concerning athletics.

In general the question of discipline at Notre Dame resolves itself into a high-minded devotion to the noblest ideals of college life. No young man of gentlemanly instincts and aspirations ever finds any of the regulations burdensome. No other kind of young man is either desired or tolerated at Notre Dame. The ideal of the University is not necessarily a large school, but rather a college home where young men who value a clean character as well as a well stored mind may associate with their own kind under the influence and direction of men of refinement and power.*

LECTURES AND CONCERTS

Each year, eminent men are invited to lecture before the students. Among those who have addressed the University in past years may be noted five Apostolic Delegates, Cardinals Satolli, Martinelli and Falconio, Monsignors Agius and Bonzano; Cardinals Gibbons and Farley; Archbishops Ireland, Riordan, Keane, Glennon, Christie, Spalding and Hanna; and Bishops Alerding, McQuaid, Maes, Muldoon, O'Gorman, Shanley, Hickey, Lillis and MacSherry. There were also such noted European churchmen as Monsignor Benson, Abbé Felix Klein, Bishop John S. Vaughan and the foremost of living English historians, Cardinal Gasquet;

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* Preparatory students are enrolled in St. Edward Hall (if under 13 years of age,) in Carroll Hall (if under 17 years of age), or in Brownson or Walsh Hall (if over 17 years of age). Collegiate men live in Brownson, Walsh, Badin, Corby or Sorin Hall.

also men of letters like Rev. D. J. Stafford, Marion Crawford, Maurice Francis Egan, Henry Van Dyke, Seumas MacManus, William Butler Yeats, James Jeffrey Roche, Wilfrid Ward, Hamilton Wright Mabie, Frank Spearman, Joyce Kilmer, T. A. Daly, Louis Wetmore, Opie Read, Bliss Perry, Leland Powers, Henry James and the Rev. John Talbot Smith; and such men of affairs, as ex-President Taft, ex-Vice-President Fairbanks, ex-Senators Beveridge, Gearin, Hill, Senator Walsh, ex-Attorney General Charles Jerome Bonaparte, Representative J. Adam Bede, the Honorable William P. Breen, Bourke Cockran, Dr. James C. Monaghan, Willis M. Moore, the Honorable Edward McDermott, His Excellency Wu Ting Fang, ex-Secretary of State, William Jennings Bryan, Vice-President Marshall, Senator B. F. Shively, Max Pam, Governors J. Harmon, J. Cox and S. M. Ralston, Hannis Taylor, Cecil Chesterton of England, and Chief Justice Fitzpatrick of Canada.

Concerts are given frequently by organizations from without.

During the year 1916-17 the University offered a course of public lectures and concerts in Washington Hall, in addition to the regular and special lectures required by the courses of instruction. The course was as follows:

CONCERTS

Oct.	18	Chicago Ensemble Company.
"	22	Miss Myrna Sharlow and Company.
Nov.	4	Chicago Male Quartette.
Dec.	2	American Operatic Quartette.
"	13	The Notre Dame University Glee Club.
1917		
Jan.	20	Tuskegee Singers.
Feb.	10	George O'Connell—Concert.
"	22	David Griffin—Concert.

Feb. 28 Parnell Egan—Concert.
Mar. 24 Susan K. Christoph—Concert.
" 25 The Notre Dame University Glee Club.

LECTURES

Oct. 1 Miss Caroline Gleason, Secretary of Industrial Welfare Commission of Oregon.—"Work of Oregon Industrial Commission."
" 5 Dr. Charles A. Barker. "How to Get the Best Out of Life."
" 13 Governor Whitman of New York. "The University Man in Public Life."
" 17 Dr. David Starr Jordan. "The Long Cost of War."
" 21 Hon. William A. McAdoo. "Beneficial Action of the Federal Reserve Law.'
" 21 Hon. Thomas Taggart. "Politics in Indiana."
" 21 Dr. Thomas Axston, of Rice Institute. "Education."
" 22 Conferring of Laetare Medal on Dr. James J. Walsh.
" 26 Samuel Gompers. "The Value of Labor Unions."
" 28 Hon. James E. Watson. "The Tariff."
" 28 Mr. Joseph E. Ralph, Head of the U. S. Department of Engraving and Printing. "Printing Our Nation's Bills."
" 30 Thomas Walsh. "Cervantes and His Works."
Nov. 11 Miss Marguerite Merington. "The Drama."—Readings.
" 25 Elmer S. Riggs, Field Museum, Chicago. "Some Extinct Monsters of North America."
Dec. 5 Dr. Edgar J. Banks. (1) "Pompeii."
" 6 Dr. Edgar J. Banks. (2) "St. Paul's Missionary Journeys."
" 7 Dr. Edgar J. Banks. (3) "Baalbek and Palmyra."
" 11 Hon. Joseph Scott. "The Catholic Man in Public Life."
" 12 James A. Flaherty, Supreme Grand Knight. "The Knights of Columbus."
" 16 Ex-Lietutenant Governor Edward J. McDermott. "Cultural Education."
" 20 Judge Ben B. Lindsey. "The Human Element in Administering Justice."

1917
Jan. 20 Frederick Palmer. "The Airplane in War."

Jan.	31	William Sterling Battis. Readings from Dickens.
Feb.	3	Mrs. George T. Courtney. "Christian Art."
"	5	Dr. Leonard Van Noppen. "Influence of Holland on America."
"	6	Dr. Leonard Van Noppen. "Van Eeden and the Modern Poets."
"	7	Dr. Leonard Van Noppen. "Vondel and Milton."
"	7	William Sterling Battis. "Impersonations from Dickens."
"	21	Paul F. Verzosa. "The Philippines."
"	25	Hon. Joseph Scott. "Some Problems in California."
"	26	Ross Crane. "Study and Criticism of Paintings."
Mar.	7	Joyce Kilmer. "The Man Without a Country."
"	28	Louis Wetmore. "One Way to Rome."
April	25	Dr. James J. Walsh. "More's Utopia."
"	27	Dr. C. W. Brown. "The Manufacture of Vaccines."
"	30	Dr. Charles W. Wallace. "Shakspeare."
May	18	Miller Reese Hutchison. "Some Inventions of Edison."

DRAMATICS

Oct.	2	Centennial Pageant.
Dec.	12	"Under Cover." Dramatic Club.
June		Diamond Jubilee Pageant.

PHOTO-PLAYS

The following photo-plays were also put on in Washington Hall:

Shore Acres.
Rip Van Winkle.
Last Days of Pompeii.
Salomy Jane.
Mystery of Edwin Drood.
Lords of High Decision.
Pagliacci.
Pawn of Fate.
The Littlest Rebel.
Treasure Island.
Col. Carter of Cartersville.
A Born Warrior. An Exile.
Jimmy Valentine.
Madame Butterfly.
The Italian.
The Dawn of Tomorrow.
The Halfbreed.
A Son of Erin.
A Corner in Colleens.
The Little Liar.
The Coward.
Manhattan Madness.
Betty of Greystone.
Indiana Historical Pictures.

STUDENT SOCIETIES

There are several literary and debating societies in the University which do such creditable work at their meetings and in preparation for them that their work takes on the nature of added courses of instruction. In each society a member of the Faculty acts as adviser. An Inter-Hall League has been formed and public debates are held annually. The College of Law also has an active debating club. The training in public speaking has always received special attention at the University. In thirty-three public debates with other universities and colleges Notre Dame met but three defeats—the decision of the judges in the greater number of these debates being unanimous. The University Dramatic Club and the Philopatrian Society stage at least three plays annually for presentation in public. The University Band, the University Orchestra and the University Glee Club also appear regularly in concerts.

Students of the Department of Civil and Electrical Engineering have each a society in which papers on engineering subjects are read and discussed. Men prominent in their profession are invited to lecture to these societies. The Pharmaceutical Society meets to discuss subjects of interest in the world of pharmacy. The School of Journalism has a special club for each of the four years of the course. In other departments where no such formal organizations has been effected similar results are reached by seminars.

NECESSARY EXPENSES

The following necessary expenses are payable on the entrance of the student:

Matriculation fee (payable the first year only)	$ 10.00
Tuition for one-half school year	60.00
Board for the first half of school year	175.00
Library fee, and Special Lecture, Entertainment and Concert Course	10.00
Use of Gymnasium and Natatorium and admission to intercollegiate football, baseball, basketball and track contests throughout the year	10.00
Laundry for the first half of school year	12.50

The following expenses are payable January 15:

Tuition for the second half of school year	60.00
Board for the second half of school year	175.00
Laundry for the second half of school year	12.50

With the first payment for Board and Tuition must be included the Incidental Expenses enumerated above together with any Extra Expenses the Student may wish to incur, such as charges for Private Room or Special Courses (listed below); likewise Laboratory Fees.

PRIVATE ROOMS

Room in Sorin Hall	$55.00 and upwards
Room in Corby Hall	$55.00 and upwards
Room in Badin Hall	$55.00 and upwards
Room in Walsh Hall	$110.00 and upwards

Lodging in Brownson Hall, $30.00 in addition to board and tuition.

A general charge of $450.00 covers board, tuition, lodging and laundry in Carroll Hall.

A general charge of $350.00 covers board, tuition, lodging and laundry in St. Edward Hall.

Note: Sorin Hall is reserved for Seniors and Juniors in the college courses.

Corby Hall is reserved for Sophomores.

Badin Hall is reserved for Freshmen.

Walsh Hall is occupied chiefly by Preparatory students; others taking rooms there are charged the same rates as Preparatory students.

IMPORTANT NOTICE

Beginning September, 1917, students of Sorin, Corby, Badin and Walsh Halls desiring either cheaper or more expensive meals than the college commons may arrange to take their meals in a cafeteria and restaurant established on the campus. While under the general supervision of the University, the restaurant will not be managed by it. Prices will be the same as in similar restaurants elsewhere.

This arrangement will not be permitted to students of Brownson, Carroll and St. Edward Halls. Students arranging for college commons will not be permitted to make any change in the middle of the semester but will be required to wait until the completion of the half year.

Credit for books, stationery, clothing and other purchases will not be given to students unless a deposit has previously been made for this purpose.

No rebate will be allowed for time of absence at the opening of the terms, September and February. The charge of $60.00 per half-year for tuition is accepted as an entirety and will not be refunded in whole or in part if the student be dismissed for wilful infraction of the University regulations; and so likewise in the event of his withdrawing from the University at any time without proper permission. An exception is made if it seems expedient for him to go home because of protracted illness. Degrees will not be conferred on any student whose account with the University has not been settled.

No student will be entered for the second term whose account for the first term has not been adjusted.

OPTIONAL EXPENSES—PAYABLE IN ADVANCE

Instrumental Music—Lessons on Piano and use of Instrument	$100.00
Use only of Piano for Advanced Students	50.00
Lessons on Guitar, Flute, Cornet, Clarinet or Mandolin	50.00
Lessons on Violin	100.00
Vocal Culture	100.00
Artistic Drawing	50.00
Typewriting, Full Course	20.00
Phonography	15.00
Elocution, Special Course	10.00
"Scholastic"—College Paper	2.00

Laboratory Fees listed later in this bulletin.

GRADUATION FEE

Bachelor Degrees, $10.00; Master Degrees, $15.00; Doctor Degrees, $25.00; Commercial Course, $5.00.

REMARKS

Term bills and other accounts are subject to sight draft if not paid within ten days after they have been rendered.

Remittance should be made by draft, post office money order or express money order, payable to the order of the President.

Checks on local banks are not desirable, and exchange will be charged in all cases.

A limited number of student waiters, clerks and library assistants can be received at reduced rates. For conditions of entrance see page 20.

Sorin, Corby, Walsh, Badin, Brownson and Carroll Halls are closed during the months of July and August. Students wishing to spend their Summer Vacation under the care of the University authorities can be accommodated at San José Park, Lawton, Michigan.

The charge for the vacation at San José Park is $150.00. Classes two hours per day are included in this arrangement. Special tutoring at professors' rates.

College of Arts and Letters

Department of Classics

Department of Letters

Department of History and Economics

Department of Journalism

Department of Commerce

Department of Foreign Commerce

THE COLLEGE OF ARTS AND LETTERS

From the founding of the University in 1842 to the establishment of the College of Science in 1865 only one program of prescribed courses of instruction leading to a degree was offered to undergraduate students. It embraced studies in the ancient and modern languages, in English literature, in history, the natural sciences and in mathematics. Graduate students might obtain a degree of master for advanced study one year after obtaining the Bachelor's degree. The group of courses was known as the Program of Classics, and the degrees of Bachelor of Arts and Master of Arts were conferred.

The demand of students for greater freedom of election in courses led the University in 1886 and again in 1898 to form other programs which embraced certain studies not contained in the Program of Classics, but which leads to degrees equivalent to the degree of Bachelor of Arts. In the matter of election of courses the student is permitted greater freedom in the program leading to the degree of Bachelor of Letters than in either of the other groups. The degrees now under charge of the College of Arts and Letters are the ordinary degrees of Bachelor of Arts, Bachelor of Letters, Bachelor of Philosophy, Bachelor of Philosophy in Journalism, Bachelor of Philosophy in Commerce, Bachelor of Philosophy in Foreign Commerce, Master of Arts and Doctor of Philosophy.

The location of the University offers special advantages for study. It is situated on a beautiful tract where cultivation has aided nature, two miles from the noisy bustle of city life. This removal from the distractions of the town gives the students opportunity to pursue their work with the quiet and concentration needed for earnest study. Nearly all the Faculty live on the grounds of the

University, dine with the students, and are accessible to them at any time. The benefits derived from this constant association with professors cannot be overestimated.

Facilities for work are found in the libraries and laboratories. The main library has between ninety and one hundred thousand bound volumes well selected and several thousand pamphlets and manuscripts. The leading literary and scientific reviews are kept on file. Books may be borrowed under easy regulations. The library contains ample reading room space and is well lighted so that students may use it at night. It is open every day from 8:00 A. M. to 9:00 P. M. There are also special collections of books in the various departments of the College, mainly works of reference.

The department of experimental psychology occupies a suite of three rooms on the ground floor of Science Hall. The use of a dark room and a silent room may also be had when need requires. The equipment includes apparatus and material sufficient for repeating all the exercises in Sanford's *Manual*, and most of the exercises in Titchener's *Experimental Psychology*, Volume I. The laboratory is supplied with hot and cold water, gas and electricity. At the beginning of the course, the aim is to give students a wide acquaintance with such familiar apparatus as the chronoscope, kymograph, plethysmograph, automatograph, primeter, campimeter, tone variator, Galton whistle, Galton bar, etc. For the study of special perceptions, there is a set of stereoscopes, pseudoscopes, and accompanying slides. Provision is also made for the investigation of pressure, temperature, pain, taste, smell and muscular sensation. Experiments in the field of auditory perception are facilitated by three sets of organ pipes, a set of Koenig's movable tuning forks and resonators, and various kinds of metronomes, For the study of physiological psychology, a complete set of models of the nervous system is at hand, together with microscopic slides of the various parts of the brain and spinal cord.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon the text-books and required readings in the preparatory courses in English; the remainder, for writing an essay.

Latin. Grammar, complete: *Cæsar*, four books of the Gallic War; *Cicero*, four orations against Cataline; *Vergil*, *Aeneid*, six books; translations at sight of passages from *Cicero* and *Cæsar;* translations of English into Latin based on the texts of the authors.

Greek. (*For Students in the Department of Classics only.*) Grammar, etymology and general rules of syntax; *Xenophon*, *Anabasis*, four Books; *Homer*, at least three books; prose composition based on text.

History. A general knowledge of the outlines of Greek and Roman History and of Medieval and Modern History, as set out in the texts used in high schools and other secondary schools. American History.

Civil Government. The Constitution of the United States; Federal Government and State Government.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and solid, including the solution of simple orginal problems and numerical examples as given in the works of *Wentworth*, or an equivalent in treatises by other authors.

Physical Geography, Physiology, Botany, Zoology.

Chemistry. Elementary. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations, and laboratory work in which at least fifty experiments have been exemplified.

Physics. Elementary. The preparation in this subject should include a course of lectures illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. Laboratory work is required. In both chemistry and physics the laboratory notebook must be presented.

French, German, Spanish. A two years' course in German, French or Spanish is required for entrance on the Program in Letters, the Program in History and Economics, and the Programs in Journalism and Commerce.

Students who have had no preparatory Latin and Greek, and are desirous of taking the Program of Studies in the Department of Classics, and students who have had but one language and are lacking in language credits will be able to supply this deficiency in classes especially arranged for that purpose.

Subjects required for entrance to Freshman year of the Department of:

CLASSICS

English	4	Mathematics	2
Latin	4	History	2
Greek	3	Science	1

LETTERS, HISTORY AND ECONOMICS, JOURNALISM

English	4	History	2
Latin	2	Mathematics	2
Modern Language	2	Science	1
Elective	3		

COMMERCE

Same as for Letters with the exception of Latin. Elective 5.

THE DEPARTMENT OF CLASSICS

The purpose of the work offered in the Department of Classics is to give students a familiarity with Latin and Greek authors which is not found in mere translations. The result sought is not entirely immediate; it looks rather to a continuation of work that can only be started in an under-graduate course. Students whose future study or effort will bring them in contact with publications in the Latin and Greek, more especially in the Latin, will find this course a great aid, if not a practical necessity. It comprises four years of English, three years of philosophy, two years of Latin and Greek, two years of history, a year of economics, a term of politics (American government), a term of sociology, a year of biology, two years of elocution. There are elective courses in the junior and senior years of study—the elective courses may be advanced work in some of the subjects of the freshman or sophomore years or new topics may be taken up. The studies in the Department of Classics lead to the degree of Bachelor of Arts, A. B. Tradition seems to warrant the reserving of the degree of A. B. for this rather definite line of subjects and to suggest the adoption of other degrees for courses of study that deviate in a large measure from the time-honored A. B.

THE DEPARTMENT OF LETTERS

This Department presents the most elastic program of studies in the College of Arts and Letters. The prescribed subjects include four years of English, three years of history, a year of economics, a term of politics (American government), a term of sociology, a year of biology, three years of philosophy, two years of elocution. The remaining subjects are elective. This gives a student the opportunity to carry out a rather extended course of study along a definite line in which he is especially interested while it insures him a substantial background of topics of general cultural value. A student might elect Mathematics, Law, Science, Accounting. It is well adapted as a pre-medical course or as a preparation for teaching. A student preparing for medicine will find ample time to take the science subjects required for entrance upon the study of medicine. A student interested in teaching will be able to take the subjects he expects to teach. The degree offered is Bachelor of Letters, Litt. B.

THE DEPARTMENT OF HISTORY AND ECONOMICS

The purpose of the program of studies offered by the Department of History and Economics is to give a rather complete presentation of history, Ancient, Medieval, Modern, and a fairly broad insight into the Social Sciences. The prescribed courses are four years of history, four years of the social sciences, four years of English, three years of philosophy, two years of elocution, one term of biology. The electives are usually taken in the social sciences though not limited to this field. Commerce and Law offer useful and practical electives. A student following this course of study is well prepared to take his place in the active life of the community—an educated judgment and mental alertness with good reserve power are the results it seeks to attain. The degree offered is Bachelor of Philosophy, Ph. B.

THE DEPARTMENT OF JOURNALISM

Early in the year 1912, Dr. Max Pam of Chicago, established a Chair of Journalism in the University and made possible a special program of studies leading to the degree of Bachelor of Philosophy in Journalism.

In accordance with Dr. Pam's purpose in founding this chair, the program is designed to prepare young men technically for Journalism and at the same time equip them with the essentials of a liberal education. Experience has shown that graduates of this course acquire such familiarity with the practical work of newspaper making as will render their services immediately valuable; at the same time they are required to be well grounded not only in the ethics of their profession, but in general philosophy, in language study, in the principles of economics and in world politics as well as the particular currents in the national life of our country.

The entrance requirements are practically the same as for the other departments in the College of Arts and Letters, but the Director of Studies shall have power to admit as a special student any young man who is believed capable of profiting by the work of the course.

Practical experience is furnished in the course. Every graduate must have worked six weeks on the local papers and brought back a satisfactory report from the editors. Every student, earlier in the course, acts as local correspondent for a daily and a weekly paper; and all students obtain departmental experience on the university weekly, *The Notre Dame Scholastic.*

THE DEPARTMENT OF COMMERCE

The courses in Commerce require four years of collegiate work and lead to the degree of Bachelor of Philosophy in Commerce. Two courses of study are offered, the one dealing with Business Administration and the other with Foreign Trade.

A comparison of the studies listed with the studies provided for students following work in Journalism and Economics, will show the possibility of choosing a course that does not necessarily limit the student to the special work in accounting or business methods. A substitution of classes is possible, in such a way as to provide for expert training along the lines of Banking, Advertising, Mercantile and Secretarial work. Special attention is given to Modern Languages.

In addition to the regular studies provided in this course, frequent lectures are given by prominent business men. This has been found to be a very successful method of bringing into the class-room a practical knowledge of the commercial world.

PROGRAM IN COMMERCE

The primary aim of the studies listed under this program is to equip the student for practical work in the business world. The work of necessity is of a specialized nature, and yet the studies are so arranged as to afford the student all the advantages of a real college training. The degree is Ph. B. in Commerce.

SHORT PROGRAM IN COMMERCE

This course is designed to meet the needs of those who have neither the preparation nor the time to follow out the subject of the regular four-year program. All the practical topics are given. Only those whose maturity of mind will insure their profiting by this work are eligible to enter on the Short Program in Business Administration. Students under nineteen years of age must have completed the High School Course before they may take up the Short Program in Commerce.

PROGRAM IN FOREIGN COMMERCE

The purpose of this course is to give students, along with a general cultural education, a technical knowledge of American and foreign markets and of approved methods of bringing the products of American industry to the attention of foreign customers. The course will be found of very special value to young men intending to enter the field of foreign commerce and particularly commerce with Latin America. No College course can take the place of actual office training, but students who have followed this program will need comparatively little of such experience to make them valuable assistants in the work of export management, and other things being equal, they will advance faster and farther than those who have not enjoyed this particular training. The degree is Ph. B. in Foreign Commerce.

SHORT PROGRAM IN FOREIGN COMMERCE

Students who display special ability or who have had actual experience with foreign conditions, whether by residence or by training in American export offices, or who are unable on account of time limitations or other good reasons, to follow the long course, will be allowed to follow the Short Program in Foreign Commerce. Students under nineteen years of age must have completed the High School course before they may take up the Short Program in Foreign Commerce.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF ARTS

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Latin	5	185	I	Latin	5	185	I
Greek	5	178	I	Greek	5	178	I
English	4	174	I	English	4	174	I
History	4	180	Ia	History	4	180	Ib
Biology	4	145	I	Biology	4	145	I
Elocution	1	173	III	Elocution	1	173	IV
Total	22			Total	22		

SOPHOMORE YEAR

Latin	5	185	II	Latin	5	185	II
Greek	5	178	II	Greek	5	178	II
Philosophy	4	206	I	Philosophy	4	206	II
English	3	174	II	English	3	174	II
History	4	180	II	History	4	181	II
Elocution	1	173	VIII	Elocution	1	173	VIII
Total	21			Total	21		

JUNIOR YEAR

Latin	3	185	III	Latin	3	185	III
Philosophy	4	206	III	Philosophy	4	206	IV, V
English	3	175	III	English	3	175	III
Economics	4	213	I	Economics	4	213	I
Elective	4			Elective	4		
Total	18			Total	18		

SENIOR YEAR

English	3	175	IV	English	3	175	IV
Philosophy	4	207	VI, VII	Philosophy	4	207	VII
Sociology	4	219	I	Politics	4	218	II
Elective	5			Elective	5		
Total	16			Total	16		

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF LETTERS

FRESHMAN YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	174	I
Language*	5			Language*	5		
History	4	180	Ia	History	4	180	Ib
Biology	4	145	I	Biology	4	145	I
Elocution	1	173	III	Elocution	1	173	IV
Elective	4			Elective	4		
Total	22			Total	22		

SOPHOMORE YEAR

English	3	174	II	English	3	174	II
Philosophy	4	206	I	Philosophy	4	206	II
Language*	5			Language*	5		
History	4	180	II	History	4	181	II
Elocution	1	173	VIII	Elocution	1	173	VIII
Elective	4			Elective	4		
Total	21			Total	21		

JUNIOR YEAR

English	3	175	III	English	3	175	III
Philosophy	4	206	III	Philosophy	4	206	IV, V
History	3	181	III	History	3	181	III
Economics	4	213	I	Economics	4	213	I
Elective	4			Elective	4		
Total	18			Total	18		

SENIOR YEAR

English	3	175	IV	English	3	175	IV
Philosophy	4	207	VI, VII	Philosophy	4	207	VII
Sociology	4	219	I	Politics	4	218	II
Elective	5			Elective	5		
Total	16			Total	16		

*Latin, French, German or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY

FRESHMAN YEAR.

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
History	4	180	Ia	History	4	180	Ib
English	4	174	I	English	4	174	I
Language*	5			Language	5		
Economics	4	213	I	Economics	4	213	I
Biology	4	145	I	Biology	4	145	I
Elocution	1	173	III	Elocution	1	173	IV
Total	22			Total	22		

SOPHOMORE YEAR

History	4	180	II	History	4	181	II
Economics	4	214	II or IV	Economics	4	214	III or V
Philosophy	4	206	I	Philosophy	4	206	II
English	3	174	II	English	3	174	II
Language*	5			Language	5		
Elocution	1	173	VIII	Elocution	1	173	VIII
Total	21			Total	21		

JUNIOR YEAR

English	3	175	III	English	3	175	III
Philosophy	4	206	III	Philosophy	4	206	IV, V
History	3	181	III	History	3	181	III
Politics	4	217	I	Politics	4	218	II
Elective	4			Elective	4		
Total	18			Total	18		

SENIOR YEAR

History	3	181	IV	History	3	181	IV
Philosophy	4	207	VI, VII	Philosophy	4	207	VII
English	3	175	IV	English	3	175	IV
Sociology	4	219	I	Sociology	4	219	II or III
Elective	2			Elective	2		
Total	16			Total	16		

* Latin, French, German or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY IN JOURNALISM

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Journalism	4	184	I	Journalism	4	184	I
English	4	174	I	English	4	174	I
Economics	4	213	I	Economics	4	213	I
History	4	180	Ia	History	4	180	Ib
Biology	4	145	I	Biology	4	145	I
Elocution	1	173	III	Elocution	1	173	IV
Total	21			Total	21		
SOPHOMORE YEAR							
Journalism	4	184	II	Journalism	4	184	II
English	3	174	II	English	3	174	II
Politics	4	217	I	Politics	4	218	II
Philosophy	4	206	I	Philosophy	4	206	II
History	4	180	II	History	4	181	II
Elocution	1	173	VIII	Elocution	1	173	VIII
Total	20			Total	20		
JUNIOR YEAR							
Journalism	4	184	III	Journalism	4	184	III
English	3	175	III	English	3	175	III
Business Law	3	215	IX	Politics	2	218	VI
Philosophy	4	206	III	Philosophy	4	206	IV, V
History	3	181	IV	History	3	181	IV
Elective	2			Elective	3		
Total	19			Total	19		
SENIOR YEAR							
Journalism	4	185	IV	Journalism	4	185	IV
English	3	175	IV	English	3	175	IV
Philosophy	4	207	VI, VII	Philosophy	4	207	VII
Sociology	4	219	I	Elective	4		
Elective	2						
Total	17			Total	15		

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY IN COMMERCE

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	174	I
Economics	4	213	I	Economics	4	213	I
History	4	180	II	History	4	181	II
Language*	9			Language	9		
Elocution	1	173	III	Elocution	1	173	IV
Total	22			Total	22		

SOPHOMORE YEAR

English	3	174	II	English	3	174	II
Economics	4	214	III	Economics	4	214	IV
History	3	181	III	History	3	181	III
Economics	2	217	XVII	Economics	2	217	XVII
Language*	5			Language	5		
Business Law	5	215	IX	Insurance	3	216	XIII
				Com. Geog.	2	216	XIV
Total	22			Total	22		

JUNIOR YEAR

Journalism	4	184	III	Journalism	4	184	III
Philosophy	4	208	X	Philosophy	4	208	X
History	3	181	IV	History	3	181	IV
Economics	2	217	XVI	Economics	2	217	XVI
Language*	4			Language	4		
Accounting	5	220	I	Accounting	5	220	II
Total	22			Total	22		

SENIOR YEAR

English	2	175	V	English	2	175	V
Sociology	4	219	I	Economics	2	214	VII
Economics	4	215	X	Economics	3	214	VIII
Lang. Read.*	1			Lang. Read.	1		
Accounting	5	221	III	Politics	4	218	II
				Accounting	4	221	IV
Total	16			Total	16		

* French, German, or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY IN FOREIGN COMMERCE

FRESHMAN YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	174	I
Economics	4	213	I	Economics	4	213	I
History	4	180	II	History	4	183	II
Language*	9			Language	9		
Elocution	1	173	III	Elocution	1	173	IV
Total	22			Total	22		

SOPHOMORE YEAR

English	3	174	II	English	3	174	II
Economics	4	214	III	Economics	4	214	IV
History	3	181	IV	History	3	181	IV
Economics	2	217	XVII	Economics	2	217	XVII
Language*	4			Language	4		
Business Law	5	215	IX	Insurance	3	216	XIII
				Com. Geog.	2	216	XIV
Total	21			Total	21		

JUNIOR YEAR

Journalism	4	184	III	Journalism	4	184	III
Economics	4	216	XV	Economics	4	216	XV
History	4	183	VIII	History	4	183	XIII
Language†	4			Language	4		
Acounting	5	220	I	Accounting	5	220	II
Total	21			Total	21		

SENIOR YEAR

English	2	175	V	English	2	175	V
Economics	4	214	X	Philosophy	4	208	X
Philosophy	4	208	X	Lang. Read	1		
Lang. Read.	1			Economics	3	214	VII
Elective	5			Economics	2	214	VIII
				Elective	4		
Total	16			Total	16		

Two years of Spanish required before third year. If this is presented on entrance, French, German or Portuguese may be substituted.

*French, German or Spanish.

†Spanish and French, or German.

SHORT PROGRAM IN COMMERCE

FIRST YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	174	I
Accounting	5	220	I	Accounting	5	220	II
Business Law	5	215	IX	Insurance	3	216	XIII
Language*	5			Com. Geog.	2	216	XIV
Economics	5	214	VI	Language	5		
				History	4	183	VII
Total	24			Total	23		

SECOND YEAR

English	2	175	V	English	2	175	V
Economics	4	215	X	Economics	3	214	VII
Accounting	5	221	III	Accounting	5	221	IV
Language*	8			Language	8		
Elective	4			Elective	4		
Total	23			Total	23		

* French, German or Spanish.

SHORT PROGRAM IN FOREIGN COMMERCE

FIRST YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	173	
Business Law	5	215	IX	Insurance	3	216	XIII
Language*	5			Language	5		
Economics	5	214	VI	Economics	3	214	VII
Elective	5			Com. Geog.	2		XIV
				History	4	183	VII
Total	24			Total	21		

SECOND YEAR

English	2	175	V	English	2	175	V
Economics	4	216	XV	Economics	4	216	XV
Accounting	5	220	I	Accounting	5	220	II
Language*	8			Language†	8		
Elective	4			Elective	4		
Total	23			Totals	23		

*Two years of Spanish. If this is presented on entrance, French, German or Portuguese may be substituted.

College of Science

Department of General Science

Department of Biology

Department of Chemistry

Department of Pharmacy

Department of Medicine

Department of Agriculture

THE COLLEGE OF SCIENCE

The College of Science was established as a distinct department of the University in 1865. The curriculum of the student was largely elective till 1867 when there was formed the group of prescribed courses now known as the Program of General Science. Seven programs are now offered to undergraduate students. The degrees under charge of the Faculty in this college are the ordinary degrees of Bachelor of Science, Bachelor of Science in Medicine, Bachelor of Science in Biology, Bachelor of Science in Chemistry, Bachelor of Science in Pharmacy, Graduate in Pharmacy and Pharmaceutical Chemist, Bachelor of Science in Agriculture. The Master's degree and the Doctor's degree are conferred under the usual conditions.

THE BIOLOGICAL LABORATORIES

The department of Biology occupies the second floor of Science Hall, and consists of four large lecture rooms and laboratories well ventilated and lighted. There are also private laboratories set apart for graduate students. The lecture rooms are furnished with charts and models necessary in teaching the different courses. The arrangement of windows is such that the room can be easily darkened so that stereopticon and lantern slides on the subjects of botany, zoology and physiology may be used. The laboratories are equipped with compound and dissecting microscopes. In each room there is a library of works of reference pertaining to biological subjects. The general laboratory of miscroscopy, histology, and embryology is supplied with compound microscopes and the equipment indispensable in these courses. The zoölogical collection fills sixteen large cases and represents typical forms of all the orders and genera of vertebrate and invertebrate animals.

For work in anatomy, besides a large collection of charts, there are anatomical models of all the parts of the human body. These can be taken apart for close study. Besides there are several mounted and unmounted human skeletons. Students pursuing courses in human anatomy at the University study under a practicing surgeon and have the privilege of attending surgical clinics in St. Joseph's Hospital of South Bend.

The bacteriological laboratory is completely equipped with compound microscopes, incubators, sterilizers, and all the improved apparatus employed in thorough and careful work in bacteriology. Apart from the others is a laboratory of photo-micrography which contains a perfect photo-micographic instrument for experimentation, photographing microscopic objects, making lantern slides, etc. A large and fully equipped dark room adjoins this laboratory.

THE BOTANICAL LABORATORIES

The botanical laboratory occupies the northwest end of Science Hall. It is well lighted and particularly well adapted to microscopical and histological work. The department is supplied with the usual requisites of a working laboratory such as compound microscopes and accompaniments for each student, the utensils and apparatus necessary for embedding by the paraffin, celoiden, soap methods, and mounting of preparations by the balsam, Venetian turpentine and glycerine methods. There are besides, microtomes, camera lucida, micrometers and aquaria for plant cultures so that the typical algae and fungi may be had alive for laboratory use in all stages of development throughout the year. Special devices for the regulation and modifying of artificial light are at hand enabling the student to work on dark as well as clear days.

Advanced students are supplied with Abbe condenser and oil immersion lenses. The laboratory is well stocked with histological material, and nearly all the types of common plant families of the phanerogamia and cryptogamia are preserved after proper fixing. The material for demonstration of the fresh water algae is particularly good and abundant. The supply of material in Venetian turpentine and glycerine is valuable, as it supplies permanent mounts in a few minute's work. There are also hundreds of specimens of rare and common types in parraffin. A herbarium containing over ten thousand species of flowering plants, and about five thousand cryptogam, supplies the needs of the classes in systematic botany. The collection includes plants from all parts of the United States and Canada,—the Pacific coast and the Southern States are especially well represented. Besides there is a large collection of fungi, marine algae, mosses, a large collection of several hundred species of myxomycetes from the Eastern and Central States, also nearly a thousand specimens of lichens from all parts of the United States and Europe. The latter herbarium is well stocked with the local flora, and special facilities are on hand for the study of the compositae. In the museum are found specimens of American and tropical woods and fruits. The laboratory for more advanced work accommodates about twenty-five students. It is supplied with eight working tables covered with plate glass or soapstone, and each place is supplied with lock and key. The lecture room in botany has a seating capacity of seventy-five. The total seating capacity of laboratories is about sixty.

The botanical library connected with the department and conveniently situated in the same building contains over 1200 volumes mostly the classics of the science, some scarcely to be duplicated anywhere in the country.

These original editions of the great makers of botany, some, autograph copies, range from the year 1492 to the present time; such works as those of Linnaeus, Tournefort, Caesalpino, Haller, Jussieu, DeCandolle, Ray, Morison, Parkinson, Lobelius, Dodonaeus, Ruellius, Fuchs, Tragus, Brunfels, Matthiole, Marcellus Vergilius, Hermolaus Barbarus, Camerarius, Dillenius, the Bauhins, Gregor Mendel, Persoon, Leeuwenhoeck Malpighi, Nehemiah Grew, Adanson, Ventenat, Willdenow, and many others. Most of these are the rare first editions.

There are also many magazines with back numbers all relating to botany. More than 120 current magazines and periodicals at present come to the files of the department alone, all relating to botany or biology. These conveniences for botanical research leading to higher degrees are especially notable, and offer to the students of the science of systematic botany advantages rather unique.

THE EDWARD LEE GREENE HERBARIUM AND BOTANICAL LIBRARY

This Herbarium contains some hundred of thousands of specimens, many thousand of which are types of plants first discovered and described by Dr. Greene during a half century of arduous botanical activity. It is one of the most valuable herbaria in America. The Library contains four thousand choice and rare volumes of botanical works, including many first editions and books now out of print.

THE CHEMICAL LABORATORIES

Chemistry Hall is situated in the southeastern part of the grounds and is a large three story structure devoted to chemistry, pharmacy, mining and agricultural chemistry. It is built in the shate of a "T" with the larger laboratories and stock rooms in the rear third floor. This arrangement helps in the ventilation of the entire building besides making these laboratories more compact. In the front of the same floor are the organic and pharmacy laboratories together with the museum and library. The second floor is given over to two large class rooms and one or two smaller ones together with the laboratories for quantitative and physical and electro chemistry. The rest of the space is taken up with research and private laboratories. On the first floor are situated the laboratories for mining and agriculture together with reasearch and class rooms for these departments. In the rear is a large reserve stock room and a locker room for students together with toilets and room for caretakers. All these laboratories are fitted up in the most approved modern style and have all the conveniences necessary for thorough and painstaking work. The laboratories for General Chemistry have no hoods but each desk is fitted up with vents for taking off the noxious gases besides acting as ventilators for the rooms. There are few side shelves as all the material used by each student is given to him in his locker so that he needs to move but little from his place in the laboratory. This conduces to more attention and a greater saving in material. The library contains besides books of reference the principal chemical journals and the museum is growing more and more by additions of minerals, chemicals designed as illustrations of substances and processes discussed in lectures.

THE PHYSICAL LABORATORIES

The department of Physics occupies a suite of three rooms in the south end of the first floor of Science Hall and three laboratories in the basement. The lecture room will accommodate seventy-five students. For the work in mechanics there is the force table, inclined planes, Geneva cathetometer, capable of measuring to the one twenty-five thousandth of an inch, a large physical balance, standard kilogram, a standard metre, a dividing engine made by the Geneva society, an Atwood's machine, a compound pendulum, a break circuit recording chronograph, a powerful hydraulic press with attachments, rotary air pumps and receivers, a large clock with electrical contact pieces, several self-winding clocks, mercury barometers and two aneroid barometers.

For the work in acoustics there are a Mercadier radiophone, a set of Koenig resonators, a set of electrically operated tuning forks by Koenig, a Scott-Koenig phonautograph, an Edison phonograph of earliest type, several sets of vibrating rods, tubes and bells, a large double siren, a set of very small tuning forks producing the highest audible sounds, a set of resonators mounted together with capsules of sensitive flames arranged for the analysis of complex sounds, a set of Koenig's movable tuning forks to draw compound curves on smoked glass, three sets of organ pipes, four sets of fine tuning forks, a set of apparatus for manometric observation, of sound phenomena, a large tuning fork producing the lowest audible sound, an electric metronome, a set of mounted tuning forks carrying small mirrors arranged to perform Lissajou's experiment, producing complex curves.

For the work in light there are a complete set of apparatus by Soleil, Paris, for the measurement of the wave lengths of light by various interference methods, a set of polarization spring apparatus, sets of lenses and spherical mirrors, two heliostats, four spectroscopes, a polarization saccharimeter, three projecting lanterns for gas or electric light and 3,000 slides, a set of large Nicol's prisms mounted, a large compound prism to form widely dispersed spectrum, two Rowland gratings 14,000 lines to the inch, a set of photographs of solar spectrum by Rowland, several cameras with lenses and attachments, a well-equipped dark-room for photographic work, and a photometric room and equipment.

For work in heat there are Melloni's apparatus for measuring radiation, absorption and reflection of heat complete with a set of prepared substances, standard thermometers, air thermometers, a steam engine indicator, several calorimeters, apparatus for determining the coefficient of linear expansion using the optical lever method.

For work in electricity and magnetism there are an absolute electrometer, a Holz machine and apparatus for illustrating static phenomena, four induction coils, six bridges of different types, several ammeters and volt-meter, one 2,000 ℔. electro magnet, standard resistance coils, an historical set of motors showing evolution of the modern machine from the early forms of the reciprocating type, ten galvanometers of various types, a complete X-ray outfit, sets of apparatus for wireless telegraphy.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations in required and elective subjects.

English. Part of the examination time is given for answering questions upon the text-books and readings required in the regular preparatory courses in English; the remainder, for writing an essay.

Physical Geography. As given in *Tarr's* text-book or an equivalent treatise.

Physiology. Martin's Human Body, or an equivalent treatise.

Zoology. Botany. Elementary.

Civil Government. The American Constitution; Federal and State Governments.

History. General outlines of Ancient, Medieval, and Modern History. American History.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and Solid, including the solution of simple original problems and numerical examples, as given in the works of *Wentworth*, *Chauvenet*, *Newcomb*, or equivalent treatises by other authors.

Trigonometry. Plane and Spherical.

Chemistry. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations. A course of at least fifty experiments in elementary chemistry actually performed by the pupil.

Physics. Elementary. The preparation in this subject should include a course of lectures, illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. In both chemistry and physics the laboratory note-book must be presented.

German. A two year course in German is required. Ability to translate at sight, easy German into English and easy English into German, or

French A two year course in French may be presented instead of German under the same conditions. Ability to translate readily, rather than an accurate grammatical knowledge, is expected.

Latin. Grammar, complete; *Cæsar*, four books of the Gallic War; translation from English into Latin based on the text of *Cæsar*.

Subjects required for entrance to Freshman year:

English	4	French, German, Latin	2
Science (Chemistry and Physics)	2	History	2
Mathematics	3	Elective	3

LABORATORY FEES FOR GENERAL SCIENCE

Assaying II	$ 5.00
Bacteriological Laboratory—*Bacteriology*	10.00
Biological Laboratory—*Zoology II, III, each*	5.00
Botanical Laboratory—*Botany II, IV, VII, each*	5.00
Chemistry I, VII, each	5.00
Chemistry III, VI, VIII, IXb, XIb, XIc, XIIIb, each	10.00
Chemistry IV, V	20.00
Mineralogy II	5.00
Pharmaceutical Laboratory II, and IV, each	20.00
Pharmaceutical Laboratory VI, and VII, each	20.00
Physics, I, III, each	5.00

LABORATORY FEES FOR MEDICINE

Anatomy I	$10.00
Anatomy II	15.00
Bacteriology II	15.00
Physiological Chemistry XIV	10.00
Histology (Human)	10.00
Physiology IV	5.00
Pharmacology and Therapeutics	5.00
Pathology II	10.00

Demonstration Courses in:

Physical Diagnosis I	$ 5.00
Embryology I	5.00
Pharmacy XV	5.00
Toxicology I	5.00

LABORATORY FEES FOR AGRICULTURE

Horticulture I, II, each	$ 5.00
Forage Crops	5.00
Grain Growing	5.00
Farm Mechanics	5.00
Agricultural Engineering	5.00
Soils, Soil Fertility, each	10.00
Entomology	5.00
Dairying	5.00

THE DEPARTMENT OF GENERAL SCIENCE

The program in General Science is calculated to afford such an acquaintance with the methods and facts of modern science as will best enable the student to fit himself, either for further study of a technical or professional kind, or for the activities of business life. It is of special value to those who intend to become teachers of science. The natural and physical sciences constitute the primary studies of this program. Grouped about these are such studies in English, mathematics, history, economics, philosophy, and modern languages, as experience has shown to be necessary for the intelligent pursuit of science and the attainment of the object of the program.

Two essays on scientific topics are required of every student in the Sophomore year and two in the Junior year.

The scientific work of the Senior year is elective. Advanced courses may be chosen in physics, chemistry, biology and mathematics.

Every candidate for a degree in the Program of General Science, is required to submit, before the final examination, a written thesis upon some subject connected with the elective work of the Senior year. The subject chosen must have the approval of the professor in the course selected. The thesis shall contain no less than three thousand words, and must be satisfactory in matter and treatment.

Students who complete the required courses, pass the final examination and present a satisfactory thesis will receive the degree of Bachelor of Science.

In the schedule an hour means two sixty minute periods of laboratory work or one of lecture or recitation.

THE DEPARTMENT OF CHEMISTRY

This program is intended for students who wish to obtain such a knowledge of chemistry as may fit them for professional work either in the laboratory or the class-room. Though fixed to a great extent, the schedule of work admits in the Junior and Senior year of some elective study.

Every candidate for a degree in Chemistry is required to write an essay in the Junior year on some subject connected with Chemistry and must submit, at least four weeks before the final examination, a written thesis on work covered in his Senior year. This thesis must contain at least three thousand words.

The degree of Bachelor of Science in Chemistry is given to those students who have written an approved thesis and have passed a satisfactory examination.

In the schedule, an hour means two sixty minute periods of laboratory work or one of lecture or recitation.

THE DEPARTMENT OF BIOLOGY

The program in Biology has been designed for students who wish to devote their time largely to biological purpuits, either as an immediate preparation for the study of medicine or veterinary science, or with a view of teaching or otherwise engaging in biological research. The students in this program are required to prepare an essay during the first term of the Junior year on some subject pertaining to biology. Every candidate for a degree must submit before the final examinations a written thesis accompanied with original drawings. Students not preparing themselves for the medical profession may substitute for the advanced courses in anatomy and physiology equivalents from either mathematics, physics, or English literature.

THE DEPARTMENT OF PHARMACY

There are three programs in Pharmacy: one of two years, leading to the degree, *Graduate in Pharmacy* (*Ph. G.*); and one of three years leading to the degree, *Pharmaceutical Chemist* (*Ph. C.*); and one of four years leading to the degree, *Bachelor of Science in Pharmarcy* (*B. S. in Ph.*).

ADMISSION

Applicants for admission to the short program must be 17 years of age, and must pass an examination in the subjects required for the completion of the first two years of high school work. A certificate of work done equivalent to two years of high school will be accepted instead of an examination.

For admission to the three and four year programs, in addition to the age limit, the same conditions apply as for entrance to the Freshman year of any regular program in the College of Science. Evidence of this work may be shown by certificate or examination.

The School of Pharmacy holds membership in the American Conference of Pharmaceutical Faculties. The object of the Conference is to promote the interests of pharmaceutical education and all institutions holding membership in the same must maintain certain minimum requirements for entrance and graduation. Through the influence of this Conference higher standards of education have been adopted from time to time and the fact that several States by law or by board ruling recognize the standards of the Conference is evidence of this influence.

METHODS

The subjects studied in this department are intended to impart a thorough theoretical as well as practical knowledge of Pharmacy, the work commencing with the simplest processes and gradually leading up to the most difficult and complicated.

Special attention is given to the little details, which are essential to success in any professional work and particularly so in Pharmacy. The student is carefully drilled in store etiquette, business hints, prescription work, and dispensing. Neatness and order in all the operations and extreme care in the manufacture of preparations are required throughout the courses.

Attention is given to Animal extracts, Serum-Therapy, Antitoxins, new Synthetic Remedies and Alkaloidal Medication.

EQUIPMENT

Each desk is supplied with all the apparatus necessary for ordinary work. Special apparatus is furnished as required.

The department contains a fully equipped Drug Store in which the student obtains practically the same experience that he would get in actual business. A second year student is placed in full charge. He is required to furnish supplies for the department, order material, write business letters, invoice stock, etc. Then at the end of a specified time he delivers the store in good order to his successor.

About 2,000 recent prescriptions written by physicians, and taken from the files of a drug store, and the same number of prescriptions, mostly, in the metric system, obtained from the San Pedro's Pharmacy in Consolacion del Sur, Cuba, constitute a very important part of the equipment. Under supervision of the instructor each student is required to read them and to compound those requiring special manipulation. The reading room is supplied with all the leading pharmaceutical journals and books of reference. The pharmacognosy room contains specimens of all the official and a great many unofficial drugs for study and identification.

THE DEPARTMENT OF MEDICINE

For a great many years there has been enrolled in the College of Science a goodly number of students who were preparing to take up the study of Medicine. Some would remain for the four years required to complete the work prescribed for a Bachelor of Science degree, but many felt unable to give this much time to their premedical study so they would depart after finishing two years of the course. These students would have been glad to continue their studies for two years more if the time thus spent would be counted toward their Doctor's degree in Medicine. To meet a condition of this kind, the University has decided to give the first two years of Medicine. Most of the work given in these first two years of Medicine has been offered in the College of Science for some time, and these courses have been well attended. The Course in the Science of Medicine is thus a natural outgrowth of the Program in General Science and the Program in Biology.

The purpose of this new program of studies is to give a thorough training in the sciences that underlie a proper understanding of medicine, the sciences that are the determining factors in the helpful administration of medicine. It is believed that a careful study of medicine as a science will not only be informative but will create an interest in the study that will be of great service to the physician in his actual practice. It is also felt that a student will have special facilities for work of this kind at the University of Notre Dame, for the general spirit of the place and the freedom from distractions that are incident to Medical Schools in the large cities will be entirely absent. A student taking the work as outlined in the program of studies should be well fitted to profit to the full by the last two years of Medicine.

The Program of studies outlined for the degree of Bachelor of Science in Medicine consists of four years of study. The first two years are taken up with the usual premedical subjects, the last two years deal with the subjects of the first two years of Medicine. After completing this course a student should be able to receive his M. D. in two remaining years, that is, at Medical Schools that require but two years of Collegiate work to enter upon the study of Medicine. Thus it is possible for a student to receive a Bachelor's degree and a Doctor's degree in six years. A student, if he wishes, may take three years or even four years college work before he takes up Medicine. The longer period of preparation is counselled, if time permits. The units, required and elective, for entrance upon the program of studies leading to the degree of Bachelor of Science in Medicine are given on page 23 of this catalogue.

THE DEPARTMENT OF AGRICULTURE

Beginning with September, 1917, the University will offer regular courses in Agriculture. The importance of the work, the frequent demands of applicants for study of this nature, the rather exceptional facilities at Notre Dame for the carrying out of the prescribed subjects in Agriculture, were the important factors that lead to the establishment of the Department of Agriculture.

There will be a four year program of studies leading to the degree of Bachelor of Science in Agriculture. (B. S. A.) and a two year program leading to a certificate of proficiency. Candidates for the degree of B. S. A. must be graduates from standard preparatory schools or have equivalent work. The units, required and elective, are the same as those set down for admission to the College of Science. A statement regarding these units will be found on page 23. The purpose of the four year program is to give the student a good general training and make him familiar with the essential lines of agricultural activity; it should fit a student to be a leader in his chosen field of work and enable him to give substantial service to the community in which he lives. In addition to the subjects proper to agriculture as such, the student will have courses in the biological sciences, chemistry, physics, geology, English, history, sociology, philosophy, transportation and economics. A satisfactory thesis is required for graduation.

THE SHORT PROGRAM IN AGRICULTURE

The purpose of this program is to meet the needs of those who have neither the time nor the preparation for the four year program. All the practical courses of Agriculture are given. A student should be 17 years of age before taking up this work and should have finished at least his elementary education. A certificate of proficiency is issued to those who successfully complete the subjects assigned and who work out in detail some practical agricultural problem.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Zoology	4	224	I	Zoology	2	224	I
Chemistry	5	148	II	Zoology	4	224	II
Language*	5			Chemistry	4	148	III
English	4	174	I	English	4	174	I
Trigonometry	5	241	F	Language	5		
				History	4	183	VII
Total	23			Total	23		

SOPHOMORE YEAR

Botany	3	145	I	Botany	3	145	I
Botany	2	146	II	Botany	2	146	II
Physics	5	211	IV	Physics	5	211	IV
Physics	2	211	III	Physics	2	211	III
Chemistry	4	149	V	Chemistry	4	149	V
Language*	5			Language	5		
Total	21			Total	21		

JUNIOR YEAR

Bacteriology	5	145	I	Geology	4	176	I
Microscopy		199	I	Astronomy	2	144	I
Mineralogy	2	176	II	Politics	4	218	II
Chemistry	4	149	VIa	Elective	9		
Chemistry	3	150	VIb				
Economics	5	214	VI				
Total	19			Total	19		

SENIOR YEAR

Philosophy	4	208	X	Philosophy	4	208	X
Electives in Science	12			Electives in Science	10		
				Thesis	2		
Total	16			Total	16		

* Latin, German, French or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN CHEMISTRY

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Chemistry	5	148	II	Chemistry	4	148	III
Algebra	5	186	I	Anal. Geom.	5	186	II
Language*	5			Language	5		
English	4	174	I	English	4	174	I
Trigonometry	5	243	F	History	4	183	VII
Total	24			Total	22		

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Chemistry	4	149	V	Chemistry	4	149	V
Calculus	5	187	III	Calculus	4	187	IV
Physics	5	211	IV	Physics	5	211	IV
Physics	2	211	III	Physics	2	211	III
Chemistry	4	149	VIa	Economics	5	214	VI
Chemistry	3	150	VIb				
Total	23			Total	20		

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Chemistry	3	151	IXa	Chemistry	3	151	IXa
Chemistry	3	151	IXb	Chemistry	3	151	IXb
Mineralogy	2	176	II	Assaying	3	198	II
Chemistry	2	151	XIa	Geology	4	176	I
Chemistry	1	151	XIb	Chemistry	3	152	XIIIa
Chemistry	1	152	XIc	Chemistry	1	152	XIIIb
Chemistry	4	150	VIII	Politics	4	218	II
Chemistry	3	152	XII				
Total	19			Total	21		

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Chemistry	3	152	XIV	Chemistry	3	152	XIV
Philosophy	4	208	X	Philosophy	4	208	X
Scientific Readings in German and French	2			Scientific Readings in German and French	2		
Elective	7			Elective	5		
				Thesis	2		
Total	16			Total	16		

* French or German

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY

FRESHMAN YEAR.

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Zoology	4	224	I	Zoology	2	224	I
Chemistry	5	148	II	Zoology	4	224	II
English	4	174	I	Chemistry	4	149	III
Language*	5			English	4	174	I
Trigonometry	5	243	F	Language	5		
				History	4	183	VII
Total	23			Total	23		

SOPHOMORE YEAR

Botany	3	145	I	Botany	3	145	I
Botany	2	146	II	Botany	2	146	I, II
Chemistry	4	149	V	Chemistry	4	148	V
Physics	5	211	IV	Physics	5	211	IV
Physics	2	211	III	Physics	2	211	III
Language	5			Language	5		
Total	21			Total	21		

JUNIOR YEAR

Bacteriology	5	145	I	Physiology	5	212	I
Microscopy		199	I	Botany	3	146	III
Botany	3	146	III	Botany	3	147	IV
Botany	3	147	IV	Geology	4	175	I
Mineralogy	2	176	II	Economics	5	214	VI
Chemistry	4	149	VIa				
Chemistry	3	150	VIb				
Total	20			Total	20		

SENIOR YEAR

Zoology	6	225	III	Zoology	6	225	III
Philosophy	4	208	X	Philosophy	4	208	X
Politics	4	218	II	Thesis	2		
Elective	2			Elective	4		
Total	16			Total	16		

* Latin, French or German.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Chemistry	5	148	II	Chemistry	4	149	IVa
English	4	174	I	English	4	174	I
Botany	3	145	I	Botany	3	145	I
Botany	2	146	II	Botany	2	146	II
Language*	5			Language	5		
Microscopy	5	199	I	Physiology	5	212	I
Bacteriology		145	I				
Total	24			Total	23		

SOPHOMORE YEAR

Pharmacy	3	203	I	Pharmacy	3	203	I
Pharmacy	5	203	II	Pharmacy	5	203	III
Chemistry	4	149	IVb	Physics	5	211	IV
Physics	5	211	IV	Physics	2	211	III
Physics	2	211	III	History	4	183	VII
Phar. Arith.	3	204	IX	Materia Med.	1	204	VIIIa
Total	22			Total	20		

JUNIOR YEAR

Pharmacy	2	203	IV	Pharmacy	2	203	IV
Pharmacy	3	203	V	Pharmacy	5	204	VIa
Chemistry	4	149	VIa	Chemistry	3	151	X
Chemistry	3	150	VIb	Economics	5	214	VI
Pharmacy	1	205	XI, XII	Phar. Latin	2	205	XIII
Pharmacog'y	2	205	X	Materia Med.	2	204	VIIIb
Mineralogy	2	176	II				
Mat. Medica	2	204	VIIIb				
Total	19			Total	20		

SENIOR YEAR

Pharmacy	6	204	VIb	Pharmacy	5	204	VII
Philosophy	4	208	X	Urine Anal.	1	150	VIIa
Politics	4	218	II	Toxicology	2	150	VIIb
Thesis	2			Philosophy	4	208	X
				Elective	4		
Total	16			Total	16		

*French, German or Spanish.

STUDIES PRESCRIBED FOR THE DEGREE OF GRADUATE IN PHARMACY

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Pharmacy	3	203	I	Pharmacy	3	183	I
Pharmacy	5	203	II	Pharmacy	5	134	III
Chemistry	4	148	Ia	Chemistry	4	149	IVa
Chemistry	2	148	Ib	Physiology	5	212	I
Microscopy	5	199	I	Physics	5	209	I
Bacteriology		145	I	Mat. Medica	2	204	VIIIa
Phar. Arith.	3	204	IX	Phar. Latin	2	205	XIII
Physics	5	209	I				
Total	27			Total	26		

SECOND YEAR

Pharmacy	2	203	IV	Pharmacy	2	203	IV
Pharmacy	5	203	V	Pharmacy	5	204	VIa
Pharmacy	1	205	XI,XII	Mat. Medica	2	204	VIIIb
Pharmacog'y	3	205	X	Botany	4	147	VI
Chemistry	4	149	IVb	Botany	3	148	VII
Mat. Medica	2	204	VIIIb				
Chemistry	4	149	VIa				
Chemistry	3	150	VIb				
Total	24			Total	16		

STUDIES PRESCRIBED FOR THE DEGREE OF PHARMACEUTICAL CHEMIST

FIRST YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
Pharmacy	3	203	I	Pharmacy	3	203	I
Pharmacy	5	203	II	Pharmacy	5	203	III
Chemistry	5	148	II	Chemistry	4	149	IVa
English	4	174	I	English	4	174	I
Bacteriology	5	145	I	Physiology	5	212	I
Microscopy		199	I	Mat. Medica	1	204	VIIIa
Total	22			Total	22		

SECOND YEAR

Pharmacy	2	203	IV	Pharmacy	2	203	IV
Pharmacy	3	203	V	Pharmacy	5	204	VIa
Chemistry	4	149	VIa	Chemistry	3	151	X
Chemistry	3	150	VIb	Botany	4	147	VI
Pharmacog'y	2	205	X	Botany	3	148	VII
Mat. Medica	2	204	VIIIb	Economics	5	214	VI
Mineralogy	2	176	II	Pharmacy	1	205	XI, XII
Phar. Latin	2	205	XIII				
Phar. Arith.	3	204	IX				
Total	23			Total	23		

THIRD YEAR

Pharmacy	6	204	VIb	Pharmacy	5	204	VII
History	4	183	VII	Urine Anal.	1	150	VIIa
Philosophy	4	208	X	Philosophy	4	208	X
Toxicology	2	150	VIIb	Politics	4	218	II
				Thesis	2		
Total	16			Total	16		

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICINE

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
FRESHMAN YEAR							
Chemistry	5	148	II	Chemistry	5	148	III
English	4	174	I	English	4	174	I
Zoology	4	224	I	Zoology	2	224	I
Language	5			Zoology	4	224	II
Economics	5	214	VI	Language	5		
				History	4	183	VII
Total	23			Total	24		
SOPHOMORE YEAR							
Physics	5	211	IV	Physics	5	211	IV
Physics	2	211	III	Physics	2	211	III
Chemistry	4	149	VIa	Botany	4	147	VI
Chemistry	3	150	VIb	Botany	3	148	VII
Philosophy	4	208	X	Philosophy	4	208	X
Language	4			Language	4		
Total	22			Total	22		
JUNIOR COLLEGIATE YEAR OR FIRST YEAR MEDICINE							
Anatomy	4–2	193	I	Anatomy	4–2	193	I
Bacteriology	3–3	194	II	Physiology	5	194	II
Histology	3–3	194	I	Embryology	3–3	194	I
Physiological Chemistry	3–3	199	XVI	Pathology	3	195	I
				Pharmacy	1–1	196	XIV
				Toxicology	1–1	196	I
Total	13-11			Total	17-7		
SENIOR COLLEGIATE YEAR OR SECOND YEAR MEDICINE							
Anatomy	3–2	194	II	Anatomy	3–2	194	II
Physiology	4–2	195	III	Physiology	4–2	196	IV
Pharmacology & Therapeutics	5–1	195	I	Pharmacology & Therapeutics	5–1	195	I
Pathology	3–2	195	II	Physical Diagnosis	2	196	I
				Thesis	2	197	
Total	15-7			Total	16-5		

The first figure in the First and Second Years of Medicine refers to the number of lectures and recitations, the second to the number of laboratory hours. Each laboratory hour in the schedule represents at least two actual hours.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

FRESHMAN YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
Botany	4	147	VI	Geology	4	176	I
Botany	3	148	VII	Chemistry	5	149	IVa
Chemistry	4	148	Ia	English	4	174	I
Chemistry	2	148	Ib	Physiology	5	212	I
English	4	174	I	Breeds and Market Classes	3	133	
Judging Live Stock	3	133					
Horticulture	2	133	I	Horticulture	2	134	II
Total	22			Total	23		

SOPHOMORE YEAR

Zoology	4	224	I	Zoology	2	224	I
Chemistry	5	149	IVb	Zoology	4	224	II
Forage Crops	5	134		Grain Growing	5	134	
FarmMechanics	4	135		Agricultural Engineering	4	135	
Physics	5	211	IV	Physics	5	211	IV
Physics	2	211	III	Physics	2	211	III
Total	25			Total	22		

JUNIOR YEAR

Microscopy } Bacteriology }	5	199 145	I	Vegetable Gardening	4	135	
Soils	5	135		Soil Fertility	4	136	
Economics	5	214	VI	Economics	2	217	XVII
Feeding Farm Animals	3	136		History	4	183	VII
Economics	2	217	XVII	Entomology	4	136	
				Sociology	4	198	I
Total	20			Total	22		

SENIOR YEAR

Agricultural Economics	3	137		Farm Management	5	139	
Stock Breeding	3	138		Dairying	3	140	
Rural Sociology	2	137		Cooperation Marketing	3	140	
Farm Poultry	3	138		Politics	4	218	II
Agricultural Education	2	138		Philosophy	4	208	X
Philosophy	4	208	X				
Farm Operat'ns	2	138					
Total	19			Total	19		

SHORT PROGRAM IN AGRICULTURE

FIRST YEAR

SUBJECTS First Term	H's a Wk	See For Description		SUBJECTS Second Term	H's a Wk	See For Description	
		Pg	Course			Pg	Course
Chemistry	4	148	Ia	Chemistry	5	149	IVa
Chemistry	2	148	Ib	Physiology	5	212	I
Botany	4	147	VI	Breeds and Market Classes	3	133	
Botany	3	148	VII	English	4		
English	4			Horticulture	2	134	II
Live Stock Judging	3	133		Physics	5	209	I
Horticulture	2	133	I				
Physics	5	209	I				
Total	27			Total	24		

SECOND YEAR

Chemistry	5	149	IVb	Zoology	2	224	I
Zoology	4	224	I	Zoology	4	224	II
Forage Crops	5	134		Grain Growing	5	134	
FarmMechanics	5	135		Farm Mgm'nt	5	139	
Soils	5	135		Soil Fertility	5	136	
				Agricultural Engineering	4	135	
Total	24			Total	25		

College of Engineering

Department of Civil Engineering

Department of Mechanical Engineering

Department of Electrical Engineering

Department of Mining Engineering

Department of Chemical Engineering

THE COLLEGE OF ENGINEERING

In the industrial development of a country the engineer takes an important part. Many new industries are springing up, and the great activity in those already established throughout the world creates a demand for the services of trained engineers.

The programs of studies in the five departments of engineering at Notre Dame are arranged to give a knowledge of the fundamental facts and theories that are applied in engineering work. Mathematics is foremost among these requirements. The natural sciences receive their share of attention, and due importance is given to language and subjects of general educational value in arranging the programs of studies.

Laboratory work and field work give a certain amount of practice in the application of the theory to actual physical conditions. These conditions are made to correspond as closely as possible to the real work of the engineer.

A student who has no liking for mathematics should not be encouraged to take up an engineering course. The successful engineer is one who thinks clearly and executes accurately. Clear thinking is necessary to master mathematical subjects and skill and accuracy are acquired by applying the results of mathematical calculations to particular practical cases in laboratory work.

Five regular programs of studies have been arranged: One leading to the degree of Civil Engineer, one to the degree of Mechanical Engineer, one to the degree of Electrical Engineer, one to the degree of Engineer of Mines, and one to the degree of Chemical Engineer.

Special Short Courses in Electrical and Mechanical Engineering are offered to accommodate those who wish to fit themselves for practical work in the shortest possible time.

The various laboratories are equipped with the most approved forms of instruments and appliances and considerable time is given to technical work. The equipment for each department will be found described and referred to on the succeeding pages of this bulletin.

In addition to the work in the laboratories and the power plants of the University, students are taken on inspection tours to the important engineering works in the neighborhood. Several of the largest manufacturing plants in the world are in South Bend or the vicinity.

In the schedules of studies one hour credit is given for each recitation or lecture which requires from one to two hours' preparation. At least two hours' actual time in laboratory work, shopwork or drawing is required for each hour on the schedule.

EXPENSES

In addition to the regular fee for matriculation, board, tuition, lodging, as given on page 40, the regular students in the five Engineering Programs are required to pay laboratory fees to cover, in part, the cost of materials consumed and the deterioration of the apparatus used.

LABORATORY FEES

Assaying III	$15.00
Chemistry I	5.00
Chemistry III, VI, VIII, XIb, XIc, XIV, XV, each	10.00
Chemistry V	20.00
Chrystallography IV	2.00
Electrical Laboratory I, II and IV, each	15.00
Gas Engine Laboratory	10.00
Mechanical Laboratory	5.00
Metallurgy I	5.00
Mineralogy II	5.00
Mineralogy III	5.00
Petrography V	5.00
Physical Laboratory I and III, each	5.00

Physical Laboratory V	15.00
Shop, per term	15.00
Surveying III, V, VIII, each	5.00

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon text-books and readings required in the preparatory courses in English; the remainder, for writing an essay.

Algebra. The whole subject as far as logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises of other authors.

Geometry. Plane and Solid, including the solution of simple problems and numerical examples, as given in the works of *Wentworth*, *Chauvenet*, *Newcomb*, or an equivalent in treatises by other authors.

Trigonometry. Plane and Spherical.

Civics. The Constitution of the United States; Federal Government and State Government.

History. General outlines of Ancient, Medieval and Modern History. American History.

Chemistry. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations. A course of at least fifty experiments in elementary chemistry actually performed by the pupil.

Physics. Elementary. The preparation in this subject should include a course of lectures, illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. In both chemistry and physics the laboratory note-book must be presented.

Botany, Physiology, Physiography, and Zoology. Elementary.

Modern Language. Engineering students must present a two years' course in German, French or Spanish.

Subjects required for entrance to Freshman year:

English	4	History	2
Mathematics	3½	French, German or Spanish	2
Science (Chemistry and Physics)	2	Elective	2½

THE DEPARTMENT OF CIVIL ENGINEERING

The courses of instruction are designed to prepare students for a thorough and systematic training in the sciences and in the principles of Civil Engineering, to perform intelligently the duties of their profession, either in the office or in some of the responsible positions superintending the construction and operation of public works. To secure these results the student is given, not only a sound theoretical training in the courses of study, but he is also required to study the practical applications of the principles upon which the theory is based. The first two years are devoted to the study of mathematics and the theoretical branches. The last two years are given to the study of applied courses—practical work in the laboratory and field, as much as possible, being required throughout the course.

Sufficient instruction is given in at least one of the Modern Languages to enable the student to read easily and intelligently professional works in this language; the study of English is pursued until the student is qualified to prepare acceptable themes on professional subjects; philosophy, history and economics are required topics. Instruction based upon standard text-books on engineering is given throughout the course by means of lectures, recitations, practice in laboratory, drawing-room and field. This work is largely supplemented by assigning to the student, for solution, practical problems bearing directly upon the subject matter discussed in the class room and requiring original investigation, thus training the student to habits of independence and awakening his interest in the work of his profession.

The department is provided with all the instruments necessary for effective work in the different branches of field engineering. The instrumental outfit consists of surveyor's transits, engineer's transits with levels and vertical circles attached to telescopes, also solar attachments, engineers' wye levels and a plane table with all the attachments, clinometers, chains, tapes, levelling rods, etc., and an Olson's cement testing machine. After the student is taught the use and adjustment of the instruments, surveys, elementary in character, are commenced and continued progressively until the more difficult principles and methods are understood. In a similar manner is instruction given in the courses of sanitary engineering, hydromechanics, resistance of materials, bridges and roofs, etc., thus familiarizing the student with practical engineering subjects, and the most improved method of execution and designing. A large drafting room offers facilities for the proper study of all the courses in mechanical drawing and design. The room is splendidly lighted from above, well ventilated and contains the latest form of drawing tables. There are suitable arrangements for blue-printing, both by natural and electric light.

The constantly growing city of South Bend, with a population now of over sixty thousand, is one of the most important manufacturing cities in the Middle West. Some of the largest plants in the world are situated here. One of the greatest water power developments in the United States is located a few miles from the University.

Special advantages are thus afforded to students for the inspection of the most modern engineering works now completed or in process of construction. The City Engineer is one of the examining board.

A thesis on some subject approved by the head of the Department connected with the course of study, is required of each student as a condition of graduation. The thesis must embody the results of original research.

THE DEPARTMENT OF MECHANICAL ENGINEERING

The Program of studies in Mechanical Engineering, leading to the degree of Mechanical Engineer, is open to young men who wish to prepare themselves for the designing of machinery, with its appurtenances, and for the successful management of power plants. As the program requires a thorough knowledge of pure and applied Mathematics, as well as of Physics, only those capable of adapting themselves to these requirements should take it up. The program of the department is modeled in the twofold belief that a thorough fundamental training is best secured by a study of the practical application of the principles involved, as well as of the theoretical principles.

The work of the department, conducted in connection with other departments elsewhere described, consists of the study, by text-book or lectures, of the materials used in mechanical engineering, accompanied by the science of pure mechanical kinematics, which traces the motions of connected parts, without reference to the cause of such motions to the work done or energy transmitted. This is succeeded by machine design, which is a direct development of kinematics, and the course continues throughout the Junior and Senior years.

The courses in Shopwork are most complete. The first year's work is confined to practice in the woodshop, in which the principles of carpentry, turning, and pattern-making are taught. When the students have become sufficiently skilled in woodwork, they take up the work of the foundry, blacksmith shop, and machine shop. A systematic course of training is provided, which advances the student by easy steps until he has mastered all the details of the work.

The latter part of the Senior year is largely taken up in the preparation of a graduation thesis. Here especially the student is taught to depend as much as possible upon his own resources and abilities in exercising his ingenuity. This is the culminating effort of the program embodying its chief results, and is expected to show considerable originality.

Every possible advantage is given the student wishing to specialize in some of the branches of engineering, toward furthering his knowledge and ability in the particular field desired. He may take up general machine design, steam engine design, specifications and contracts, installation and erecting, original research or gas engine design and operation. A systematic curriculum of study will be outlined in each individual case leading to a complete and proficient knowledge of the work undertaken.

Access may be had to all machinery and apparatus of the University contained in the various power plants and laboratories elsewhere described, and every effort is made by the authorities to make the work as comprehensive as possible.

The laboratories and shops are equipped with all necessary apparatus and machinery. The wood shop is supplied with modern work benches fully equipped with the smaller tools necessary for carpentry, lathes for turned work, jig saws, a pony planer, a joiner, an edge moulder and shaper, a universal trimmer, circular saw with dado and drilling attachments and band saw, the whole forming an adequate equipment for a thorough mastery of joinery, scroll work and pattern-making.

For operating the machine shop there are two ten-horse power motors from which power is transmitted to the various machines by line shafting running the entire length of the building. The latest improved lathes have been provided, nine in number, varying from a five-inch swing in the smallest to a large engine lathe with sixteen foot bed, having a capacity for work twenty-eight inches in diameter. Two drill presses, a large planer, a shaping machine and a Brown and Sharpe milling machine complete the outfit, thus making the machine shop a model of its kind. There have been completed lately in the machine shop seven new screw cutting lathes of fourteen-inch swing, a high speed bench hand lathe, one twenty-eight inch Sibley and Ware drill press, one horizontal 8x12 slide valve steam engine and a wood milling machine. The equipment is added to regularly, and recently a Seneca Falls lathe of fourteen inch swing and eight foot bed, a Crown high speed lathe, a Toledo punch press and a complete new set of chucks, drills, taps, mandrels and lathe dogs have been installed to meet the additional requirements of the courses. It is the policy of this department to refrain as much as possible from exercise work, and each student is usually taking part in the construction of some new machine or engaged on general repair work for the University, a plan which is regarded superior to a fixed routine of exercises.

The blacksmith shop has the usual complement for teaching forging, annealing, welding and tool-making. In the foundry work the student is instructed in the proper disposition of gates and sprues, the mixing of sand, setting up and drawing simple and complicated patterns and core making. This is supplemented with lectures on the proper mixing and heating of cast iron for the various purposes for which it is used.

In addition to the facilities afforded by the shops, the engineering students have access to the steam and power plants of the University which have been recently remodeled and made to compare favorably with the best contemporary practice. The main steam plant contains two batteries of ten horizontal tubular boilers, aggregating 1200 horse power. In connection with the boilers is installed the necessary testing apparatus as follows: a Worthington hot water meter for measuring the amount of feed water, a feed water thermometer for getting temperature of same, a high range thermometer for temperature of generated steam, a throttling calorimeter for ascertaining the quality of steam and an automatic recording pressure gauge giving a continuous record of the boiler pressure. Provision is made for finding the temperature and pressure of the flue gases by means of a pyrometer and draught gauge and for obtaining samples of flue gas for analysis with Fisher's analysis apparatus. These, with a Carpenter coal calorimeter for determining the heating value of fuel, comprise a full and complete equipment for giving the student an intimate knowledge of the practical part of boiler mangement and testing. A Webster feed water and purifier, two compound duplex pumps, two vacuum pumps working on the heating system, two large Worthington fire pumps 16x9x12 with a capacity of 1500 gallons per minute, with numerous separators, steam traps, automatic reducing valves, etc., complete the apparatus in the main steam plant. A McEwen high speed automatic engine, an Armington and Sims engine of smaller type and several low speed horizontal engines with polar and roller planimeters, indicators, reducing wheels, slide rules and other necessary instruments, are used in studying the operation of the steam engine, distribution and economy of steam, regulation valve setting and heat wastes.

There have been recently donated to the mechanical laboratory about four hundred brass and iron fittings used in steam and gas engineering, including feed water injectors, sight feed lubricators, oil cups, safety valves, relief valves, different varieties of globe valves, gate valves, tees, elbows, crosses, unions, bushings, and reducers. Many of these have been sectioned to show the dimensions, and facilitate a study of the internal structure and arrangement of parts.

In the gas engine laboratory are installed one horizontal eleven horse power four-cycle engine completely equipped for experimental runs, with indicator reducing motion, prony brake, scales and thermometers, a five horse power two-cycle vertical gas engine of the marine type, a four horse-power horizontal four-cycle gasoline engine with circulating pump and cooling tower, one Motsinger auto-sparker with induction coil, one Apple ignition dynamo with storage battery, two Hendricks automatic igniters together with carburetors, spark plugs, spark coils, indicators, and all necessary equipment for a complete study of the gas engine.

Recent additions include the latest type Kingston carburetor and muffler, a National storage battery, Pittsfield induction coils and ash coils, two Wizrad magnetos with brass armored spark coils, one four engine cylinder distributor and a number of improved standard and meter spark plugs.

A set of castings for an eight horse power engine to be operated by alcohol has been placed in the machine shop, and the work of designing and building the engine will be undertaken by the students.

In the department library, standard authors may be consulted and the current literature on engineering topics is kept on file for reference, as well as a complete line of trade catalogues.

SHORT PROGRAM IN MECHANICAL ENGINEERING

Theory, Design and Operation of Gas, Oil and Vapor Engines.

This program is devoted exclusively to the study of explosive motors, in theory, design, construction and operation.

The rapid progress made in recent years in the design of gas engines, together with their adaptation to the supplying of power for almost every requirement, has led to establishment of this program for young men wishing to make a special study of this branch of engineering.

The essential work of the first year consists of a general descriptive study of the different types of engines with discussions on the general management operations, care and special uses to which this type of motor may be applied. During the second year the general theory of the gas engine is studied and the design of an engine for specific purposes is undertaken by each student.

The laboratory work will consist in part of indicator practice, determination of mechanical and thermodynamic efficiency, speed regulation, and economy. To these are added studies in various kinds of ignition, operation of vaporizers and carburetors and practical management of internal combustion engines. A considerable part of the work will consist of the complete adjustment and successful operation on the test-block, under varying loads of the engine built by the student. Experiments in flame, electric and hot tube ignition, operation of vaporizers and carburetors, construction of spark coils and care of motors will complete the work.

The courses in shopwork are intended to give practical application to the theories advanced in the class room by the complete building and testing of a gas engine of a design to be selected by the demonstrator. Each student is required to prepare the patterns and core boxes, machine the castings and forgings, assemble the complete engine and submit a comprehensive report of a test on the machine constructed. If the report proves satisfactory a certificate of proficiency is given to the student and the gas engine becomes his own property.

For admission to this program the student, unless he has completed a regular high school course of study should be 19 years of age, and must certify by examination or certificate evidence of a knowledge of algebra as far as logarithms, plane geometry, and his further ability to pursue the studies of the first year. In case a student has not had this preparatory work, he may, with special effort, complete it in addition to the regular work of the course. Candidates shall also write a short essay, which must be satisfactory in spelling, sentence and paragraph construction.

THE DEPARTMENT OF ELECTRICAL ENGINEERING

The remarkable development of electrical industries during the past few years has created a demand for men skilled in the theory and practice of electrical and mechanical work. The study of the subjects arranged in the program of Electrical Engineering is intended to give a general education as well as a special training in the technical branches involved in the various pracatical pplications of electricity in industrial operations.

General theory is given in lectures and by recitations from standard text-books. In the laboratories and shops the operations explained in the class-rooms are performed by the student, in doing which he acquires skill in handling tools and instruments, and obtains a working knowledge of the principles involved. Careful records of the work done in laboratories are kept by the student and are handed in for suggestions and corrections at the end of every week.

The University is located near a great manufacturing center in the growth of which electricity is taking a very prominent part. Electric power generated by steam is now being distributed and utilized in several large plants, some using the three phase alternating system, while others are using the direct current. Several of the largest water power developments in the Middle West are situated within a few miles of the University. From this system we receive three phase alternating currents which furnish light for our buildings and grounds, and power for driving motors in our shops and printing office, etc., all of which are operated by electricity.

There are numerous other transmission lines and electrical power plants operated by water power within a short distance. Our students visit these plants accompanied by an instructor who points out the applications of the text-book theory in the design of electrical apparatus and its operation under actual working conditions.

Each candidate for graduation must present at the end of the Senior year an acceptable thesis embodying the results of an extended original research on an engineering subject, chosen at the beginning of the year, with the approval of the head of the department. The descriptive part must be typewritten, and bound in book form together with the drawings.

The equipment for the laboratory work in electrical engineering includes dynamos typical of the various classes, accessory apparatus and measuring instruments as follows: A three phase A. C. induction motor arranged to operate on a single phase circuit with a condenser compensator, a high frequency 1000 V. 33 K. W. composite wound Wood alternator of the latest type with exicatter and a full set of switchboard instruments, several transformers, of different capacity, a high tension transformer for testing insulation, an Edison bipolar 10 K. W. 125 V. generator, a Thompson-Houston arc light machine with regulator and fifteen lamps, a Wood arc machine, capacity 25 light, an Edison bipolar, 3 K. W. 125 V. dynamo with special winding, a Van Depoele compound wound dynamo, a special A. C. 5 H. P. dynamo or rotary converter, a series wound dynamo with wrought iron field, number of small motors, a 10 H. P. induction motor, three phase, 220 volts 60 cycles, a motor generator set consisting of an adjustable speed 8 H. P., D. C. motor, direct connected to a special multiphase, revolving field A. C. dynamo.

A three K. W. three phase rotary converter, an eight K. W. rotary converter, a set of inclined coil alternating current portable instruments, voltmeter, ammeter and wattmeter, telegraph relays, sounders, switchboard, etc., telephone apparatus including subscribers set of various modern types, a fifty drop manual switchboard complete and a lot of separate drops, jacks, switches, lightning arresters, etc., automatic telephone switchboard containing first and second selector and connector switches, interrupter heat coils, etc., and three subscribers sets—with this apparatus all the operations involved in the operation of 10,000 system may be performed, a complete central energy switchboard, several lines and subscribers' sets and a selective signaling four party line outfit, a collection of historical sets including Reis' transmitter and receiver, a standard portable bridge, a common portable bridge, a testing battery, a power or foot lathe with wood turning tools, drills and hand tools for metals, a set of tools for metal working, a calibrating lamp rack, a D'Arsonval and common galvanometers, Ballistic galvanometer, standard condenser, etc., for capacity work, resistance boxes, standard meghoms, etc., high resistance Thompson galvanometer, standard cells, voltmeter arranged for the comparison of incandescent lamps, a plug switchboard controlling all circuits, a plating dynamo and a buffer for cleaning and polishing work to be plated, solution tank, etc.,—in all, a complete outfit for electrotype work, a hot wire ammeter, twelve ammeters and voltmeters mostly of the Weston type for direct current measurements, a Kohlrausch bridge for measuring battery resistance, etc., a lot of arc lamps series and constant potential, open and enclosed arcs. Wattmeters of various types, a collection of motor starting rheostats, several sets of parts of incandescent lamps showing the various stages in their manufacture, a large collection of porcelain insulators used in electrical work including a lot of insulators for high tension transmission lines, a lot of armature core disks, transformer core stampings, dynamo frames, formed coils, brush holders, pole pieces, samples of insulation, commutator segments, etc., used in dynamos of good design, donated by leading manufacturers of electrical machinery, a case of marked samples of wire insulators, lamps and other constructive materials, a library of practical books of reference and files of leading periodicals and trade publications, a Cooper Hewitt mercury vapor lamp, a high frequency Telsa coil and condenser, a working model of the induction motor, an armature winding model mounted to rotate in bipolar and multipolar fields, a storage battery 25 cells with universal switch to connect for various voltages.

For the work of electricity and magnetism in the courses in physics there are the following: An absolute electrometer, a Holtz machine and apparatus for illustrating static phenomena, four induction coils, six bridges, of different types, several ammeters and voltmeters, one 2,000 lb electro magnet, standard resistance coils, a historical set of motors showing evolution of the modern machine from the early form of the reciprocating type, ten galvonometers of various types, a complete X-ray outfit, a set of apparatus for wireless telegraphy. Other available apparatus has been previously indicated.

For the work in chemistry, drawing and shopwork, the equipment and facilities will be found described elsewhere in the bulletin.

SHORT PROGRAM IN APPLIED ELECTRICITY

Students who do not wish to take the languages and higher mathematics required in the regular four-year program should take up the Short Program, which may be completed in two years. The studies are arranged to give an accurate knowledge of the fundamental theories of electricity and magnetism, as well as a certain amount of skill in handling electrical machinery and appliances. Algebra, geometry, trigonometry, and elementary physics, are included, for they are necessary in order to carry on successfully the practical work of designing, manufacturing and testing or operating electrical apparatus. Training in this practical work is given in the drawing room, the machine shops, and in the electrical and physical laboratories.

The actual conditions of the commercial application of electricity to the distribution of light and power are learned by testing, repairing and making additions to the University plant, and by visiting the numerous electrical establishments in the vicinity, accompanied by an instructor.

The study of the principles of mechanical drawing is taken up early in the program and sufficient practice is given to enable the student to make working drawings and to follow them in the construction of apparatus in the shops and laboratories.

Applicants for admission to the Short program should be at least 19 years of age unless they have completed a regular High School course of study. They should have a fair knowledge of the subjects taught in the common schools, especially arithmetic, and algebra, as far as logarithms, and plane geometry. They shall also write a short essay which must be satisfacory in spelling, punctuation, sentence and paragraph construction. In case a student has not had this preparatory work he may, with special effort complete it in addition to the regular work of the course.

When the required studies have been satisfactorily completed, a certificate of proficiency is issued.

THE DEPARTMENT OF MINING ENGINEERING

The wonderful growth and expansion of the mining industry, not only in this country but in Mexico, Central and South America, has created a constant demand for trained men who have a thoroughly practical as well as theoretical knowledge of mining operations.

The aim of this department is to give the student sufficient training in the various technical branches of mining to enable him to project and successfully carry through a mining enterprise.

The course of studies for the degree of Mining Engineer includes the essential subjects of Mechanical Engineering, particularly those which have special prominence in mining work; for the economical operation of any mine depends to a great extent upon the judicious selection and proper operation of the machinery in the power plant, mill and smelter. Likewise the subjects of Civil Engineering with but few exceptions, are embraced in the mining course, for the reason that many of the problems of Civil Engineering must be solved in the laying out and directing of mining work. Plans and surveys of the surface improvements and underground workings of a mine are made by the Mining Engineer.

In addition to these subjects the course includes the following special branches: Crystallography, Mineralogy, Petrography, Physical and Chemical Geology, Economic Mining Geology, Metallurgy, Ore Dressing, Assaying and a thorough study of Inorganic Chemistry in its application to mining and metallurgy.

Throughout the course the object is not only to present clearly the theory underlying each subject, but to fix it in the mind of the student by practical work in the laboratory, shop, drafting room and in trips to the mining districts where the student becomes familiar with the practical application of the principles laid down in the text-book and lectures.

The subject of the thesis required in this course must be along the line of mining or metallurgy and consist of original research work in one of its special branches, to be approved by the head of the department.

THE DEPARTMENT OF CHEMICAL ENGINEERING

Chemical manufacture has developed so rapidly and grown so exacting that there has arisen a demand for men who not only can create and improve chemical processes strictly so-called, but who can deal with the problems of construction and maintenance as far as they are related to the chemical industries. This often demands a broad knowledge of the effect of chemical forces on materials of construction such as the ordinary engineer does not usually possess and which can come only from a detailed study of chemical laws and chemical action applied not only to laboratory methods but also to technical processes. To prepare young men for such work the course in Chemical Engineering has been designed.

The student taking up this course is given a thorough training in chemical principles similar to that outlined in the Course in Chemistry, except that the laboratory period is somewhat shortened. To this training is added a certain amount of the theory and laboratory practice in Mechanical Engineering sufficient for the needs of chemical industries, together with a consideration of electrical currents as used in chemical manufacture.

A carefully prepared thesis on a topic approved by the dean of the department is a requisite for graduation.

STUDIES PRESCRIBED FOR THE DEGREE OF CIVIL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	186	I	Anal. Geom.	5	186	II
English	4	174	I	English	4	174	I
Language*	5			Language*	5		
Chemistry	5	148	II	Chemistry	4	148	III
Drawing	2	164	I	Drawing	2	164	I
				Surveying	2	154	II, III

Total 21 Total 22

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Calculus	5	187	III	Calculus	4	187	IV
Des. Geom.	3	154	I	Calculus	1	187	V
Surveying	5	154	IV, V	Des. Geom.	3	154	I
Geodesy		155	VI	R. R. Survey'g	5	155	vii, viii
Physics	5	269	II	Physics	5	209	II
Physics	2	211	III	Physics	2	211	III
Drawing	1	165	V	Drawing	1	165	V

Total 21 Total 21

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Analytic Mechanics	5	156	VIII	An. Mechanics	3	156	VIII
Mineralogy	2	176	II	Mechanics of Materials	5	157	X
Drawing	2	165	VI	Geology	4	176	I
Philosophy	4	208	X	Drawing	2	165	VII
History	4	183	VII	Philosophy	4	208	X
Economics	5	214	VI	Astronomy	2	144	I
				Roads, Pav'mt	2	157	XI

Total 22 Total 22

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Engineering	5	158	XII	Engineering	5	158	XII
Hydromechan	3	160	XVI	Hydromechan	3	160	XVI
Bridges, Roofs	5	159	XIV	Graph. Stat.	5	159	XV
Sanitary Engineering	2	159	XIII	Sanitary Eng.	2	159	XIII
Thesis	1			Thesis	1		

Total 16 Total 16

*French, German or Spanish

STUDIES PRESCRIBED FOR THE DEGREE OF MECHANICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	186	I	Anal. Geom.	5	189	II
Language*	5			Language*	5		
Drawing	2	164	I	Drawing	2	164	I
Chemistry	5	148	II	Chemistry	4	148	III
English	4	174	I	English	4	174	I
Shopwork	1	191	XIVa	Shopwork	1	191	XIVb
Total	21			Total	21		

SOPHOMORE YEAR

Calculus	5	187	III	Calculus	4	187	IV
Drawing	2	164	II	Drawing	2	164	II
Physics	5	209	II	Physics	5	209	II
Physics	2	211	III	Physics	2	211	III
Shopwork	2	192	XIVc	Shopwork	2	192	XIVd
History	4	183	VII	Pol. Science	5	214	VI
Total	20			Total	21		

JUNIOR YEAR

An. Mechanics	5	156	VIII	Hydromechan	2	160	XVI
Kinematics	3	190	V	Mech's of Mat	3	157	X
Calorimetry	2	211	Vb	Mach. Design	2	190	VI
Shopwork	2	192	XIVe	El. St. Eng.	5	190	VIb
Philosophy	4	208	X	Elec. Measure	1	211	Va
Elective	4			Shopwork	3	192	XIVf
				Philosophy	4	208	X
Total	20			Total	19		

SENIOR YEAR

Materials of Engineering	2	189	II	Steam Power Plants	5	189	III
Thermodynam	4	188	I	Steam Boilers	3	189	IV
Steam Power Plants	5	189	III	Thermodynam	4	188	I
Mechan. Lab.	3	191	VIII	Surveying	2	154	II
Thesis	2			Surveying	1	154	III
				Thesis			
Total	16			Total	16		

*French, German or Spanish

STUDIES PRESCRIBED FOR THE DEGREE OF ELECTRICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	186	I	Anal. Geom.	5	186	II
Language*	5			Language*	5		
Chemistry	5	148	II	Chemistry	4	148	III
Drawing	2	164	I	Drawing	2	164	I
English	4	174	I	English	4	174	I
Shopwork	1	191	I	Shopwork	1	191	XIVb
Total	22			Total	21		

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Calculus	5	187	III	Calculus	4	187	II
Physics	5	209	II	Calculus	1	187	V
Physics	2	211	III	Physics	5	209	II
Descrip. Geom.	2	164	III	Descrip. Geom.	2	164	III
Surveying	5	154	IV, V	Physics	3	211	III
History	4	183	VII	Economics	5	214	VI
Shopwork	1	192	XIVc	Shopwork	3	192	XIVd
Total	24			Total	23		

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Dyn'mo Elec. Machines	4	167	IV	D. C. Engin'g	3	168	V
				Anal. Mech.	3	156	VIII
Anal Mech.	5	156	IX	Mech. of Mat's.	3	157	X
Kinematics	3	190	IV	El. St. Eng.	5	190	VIb
Physics	2	211	Vb	Physics	1	212	Va
Philosophy	4	208	X	Philophy	4	208	X
Shopwork	3	192	XIVe	Shopwork	1	192	XIVf
Elec. Eng. Club		171	XVIII	Elec. Eng. Club		171	XVIII
Total	21			Total	20		

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Alternating Currents	5	168	VI	A. C. Mach.	3	169	VII
				Probs. of Eng.	2	169	VIII
Problems of Engineering	2	169	VIII	Hydr. Pow. Pl.	3	170	XII
				Designing	2	169	IX
Hydraul. Eng.	3	170	XI	Elec. Lab.	3	169	X
Designing	2	169	IX	Business Law	2		
Electrical Lab.	3	169	X	Elec. Eng. Club		171	XVIII
Elective	1			Thesis	1		
Elec. Eng. Club		171	XVIII				
Total	16			Total	16		

*French, German or Spanish
Summer Thesis between Junior and Senior years. See Page 33.

STUDIES PRESCRIBED FOR THE DEGREE OF MINING ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description Pg	Course	SUBJECTS Second Term	Hrs a Wk	See For Description Pg	Course
Algebra	5	186	I	Anal. Geom.	5	186	II
Chemistry	5	148	II	Chemistry	4	148	III
Drawing	2	164	I	Drawing	2	164	I
English	4	174	I	Shopwork	1	191	XIVb
Mining				English	4	174	I
Engineering	3	199	I	Mining Eng.	3	199	I
Shopwork	1	191	XIVa	Surveying	2	154	II, III

Total 20 Total 22

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Calculus	5	187	III	Calculus	4	187	IV
Surveying	5	154	IV, V	Calculus	1	187	V
Geodesy		155	VI	R.R.Surveying	5	155	vii, viii
Physics	5	209	II	Physics	5	209	II
Physics	2	211	III	Physics	2	211	III
Chemistry	3	149	V	Chemistry	3	149	V
Drawing	1	165	V	Drawing	1	165	V
History	4	183	VII	Pol. Science	5	214	VI

Total 25 Total 26

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Anal. Mech.	5	156	IX	Mech. of Mats	3	157	XI
Mineralogy	2	176	II	Hydromech'n.	2	160	XV
Drawing	2	164	II	Mineralogy	3	176	III
Mineralogy	3	176	III	Drawing	2	164	II
Crystall'phy	5	177	IV	Geology	4	176	I
Philosophy	4	208	X	Mine Survey'g	2	199	II
				Philosophy	4	208	X
				Shopwork	2	192	XIVc

Total 21 Total 22

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Ore Dressing	3	198	IV	Assaying	5	198	III
Metallurgy	3	197	I	Economic			
Phys. & Chem.				Mining Geol	2	177	VII
Geology	3	177	VI	Graph. Statics	5	159	XV
Petrography	2	177	V	Petrography	2	177	V
Gas Engines	5	191	X	Eng. & Boilers	3	191	IX
Mat. of Engin'g	2	189	II	Thesis	1		

Total 18 Total 18

SUMMER WORK

This course consists of actual Mining Engineering practice in the mines, under the direction of the head of the department. Each student is required to make a complete, accurate underground survey with a mining transit, connecting the mine traverse with one on surface, through vertical and inclined shafts. A study of the different methods of mining in several mines are made with special attention given to Geology in its relation to economic mining; ore dressing mills and metallurgical plants are carefully inspected to familiarize the student with the best concentrating and smelting methods. **Sixty hours a week for four weeks.**

STUDIES PRESCRIBED FOR THE DEGREE OF CHEMICAL ENGINEER

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	186	I	Anal. Geom.	5	186	II
Chemistry	5	148	II	Chemistry	4	148	III
Drawing	2	164	I	Drawing	2	164	I
Language*	5			Language*	5		
English	4	174	I	English	4	174	I
Shopwork	1	191	XIV	Shopwork	1	191	XIVb
Total	22			Total	21		

SOPHOMORE YEAR

Calculus	5	187	III	Calculus	4	187	IV
Physics	5	209	II	Physics	5	209	II
Physics	2	211	III	Physics	2	211	III
Drawing	2	164	III	Drawing	2	164	III
Chemistry	4	149	V	Chemistry	4	149	V
Shopwork	2	192	XIVc	Shopwork	2	192	XIVd
History	4	183	VII	Economics	5	214	VI
Total	24			Total	24		

JUNIOR YEAR

Chemistry	4	149	VIa	Chemistry	5	153	XV
Chemistry	3	150	VIb	Mech. of Mats	3	157	X
Anal. Mech.	5	156	VIII	Hydromech'n.	2	160	XVI
Kinematics	3	190	VII	Chemistry	2	150	VIII
Drawing	2	164	II	Steam Boilers	3	191	IV
Philosophy	4	208	X	Philosophy	4	208	X
Calorimetry	2	211	Vb	Drawing	2	164	II
				Elec.Measur't	2	211	Va
Total	23			Total	23		

SENIOR YEAR

Chemistry	3	149	IXa	Chemistry	3	151	IXa
Chemistry	3	149	IXb	Chemistry	3	151	IXb
Chemistry	3	150	XIIIa	Chemistry	3	152	XIV
Chemistry	1	150	XIIIb	El. St. Eng.	5	190	VIb
Chemistry	3	150	XIV	Mech. Lab.	2	191	VIII
Chemistry	2	149	XIa	Thesis			
Chemistry	1	149	XIb				
Chemistry	1	150	XIc				
Total	17			Total	16		

*French, German or Spanish.

STUDIES PRESCRIBED FOR SHORT PROGRAM IN MECHANICAL ENGINEERING

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Geometry	5	243	E	Trigonometry	5	241	F
Drawing	2	164	I	Drawing	2	164	I
Shopwork	2	192	XIVc	Shopwork	2	192	XIVd
Physics	5	209	I	Physics	5	209	I
Gas Engines	5	191	X	Vapor Engines	5	191	X
Total	19			Total	19		

SECOND YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Gas Engine Design	15	192	XI	Gas Engine Design	10	192	XI
Gas Power Plants	3	190	VII	Gas Engine Laboratory	3	192	XIII
Gas Engine Construction	3	192	XII	Gas Engine Construction	3	192	XII
Gas Engine Laboratory	3	192	XIII	Engines and Boilers	3	191	IX
Total	24			Total	19		

STUDIES PRESCRIBED FOR SHORT PROGRAM IN APPLIED ELECTRICITY

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Geometry	5	243	E	Trigonometry	5	243	F
Drawing	2	164	I	Drawing	2	164	I
Shopwork	2	191	XIVa	Shopwork	2	191	XIVb
Physics	5	209	I	Physics	5	209	I
Applied Electricity	5	166	I	Applied Electricity	5	166	I
Total	19			Total	19		

SECOND YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Gas Pwr. Pl'ts	3	190	VII	Engines and Boilers	3	191	IX
Designing	3	169	IX	Designing	3	169	IX
Shopwork	3	192	XIVc	Shopwork	3	192	XIVd
Dynamo Machinery	5	168	VI	Dyn. Mach.	5	168	VI
Applied Electricity	5	167	II	Applied Electricity	5	167	II
Total	19			Total	19		

THE COLLEGE OF ARCHITECTURE

The courses in Architecture have been planned to provide the student with the elements of a liberal training combined with the artistic and scientific studies necessary to equip him for the practice of his profession.

The curriculum required for the degree of Bachelor in Architecture is arranged for the average student to complete in four years, although in some cases it may require a longer period, as a good standing in design must be attained before the degree is given.

The work required for the student wishing to specialize in construction which leads to the degree of Bachelor in Architectural Engineering is the same for the first two years with increased attention to mathematics, and during the last two years a more extended study of constructive problems.

A master's degree will be conferred upon students completing graduate study in residence if such students have received their degree from Notre Dame, or from another school of Architecture of equal standing; upon her own graduates who spend a year in residence at another school or in travel, following an approved program of study and investigation; or at the end of not less than two years if that time is spent in practice and in accordance with university requirements.

A prog am is arranged covering two years for students who have had some office experience and are equipped to profit by the work.

EQUIPMENT

The College of Architecture possesses a collection of books, a classified collection of plates and photographs, a file of the best architectural periods, signed architectural drawings from the Ecole des Beaux Arts and from American architects, working drawings and specifications, architectural models and casts.

ENTRANCE SUBJECTS

Applicants who do not present properly attested certificates for preparatory work must take entrance examinations.

English. Part of the examination time is given for answering questions upon the text-books and required readings in the preparatory courses in English; the remainder, for writing an essay.

Algebra. Fundamental operations, simple equations, involution and evolution, radicals, radical equations and quadratic equations, including everything up to logarithms, as given in *Wentworth's College Algebra*, or an equivalent in the larger treatises by other authors.

Geometry. Plane and Solid.

Trigonometry. Plane and Spherical.

History. A general knowledge of the outlines of Ancient, Medieval and Modern History.

Civics. Elementary.

Physiology. Physiography. Botany. Zoology. Elementary.

Chemistry. Elements of inorganic chemistry, as given in high schools of good standing. Laboratory work is required.

Physics. Elementary. The preparation in this subject should include a course of lectures illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's* or *Gage's*. Laboratory work is required.

French. A two years' course in French is required. Ability to translate French into English, and easy English sentences into French. Or,

German. A two years' course in German is required. Ability to translate German into English, and easy English sentences into German.

Drawing. A knowledge of the use of drawing instruments, of projection drawing and elementary freehand.

Subjects required for Freshman standing:

English	4	History	2
Mathematics	3	French or German	2
Science (Chemistry and Physics)	2	Elective	3

THE PROGRAM IN DESIGN

It has been the aim of the College in offering this program so to arrange it that the student pursuing it will have upon completion a liberal education, a practical working knowledge of Construction, and a systematic and thorough training in Architectural Design and Composition.

The course is built up around the work in the drafting-room where half of the student's time is spent. The work in Design, beginning in the Freshman year with the study of the orders and simple problems involving their combination and use, and continued in the three following years by means of minor and major problems involving the planning of all classes of buildings from the simplest to the most monumental, is supplemented and rounded out by exercises in the various methods and media of rendering and by a thorough course in freehand and modeling.

The materials and methods of all trades and professions engaged in building operations are systematically studied in the Construction classes throughout the four years of the program. The writing of specifications for each branch in labor is studied synchronously. Practical work in the various trades is given so that the student may know good work and thus be able to superintend construction intelligently. The practical lessons are supplemented by trips to the important building operations and industries in the neighborhood of the University.

The standard hand-books and mill-books are used as supplementary text-books.

Graphic methods of determining stresses in beams, girders and trusses of all forms, are studied and numerous practical problems solved.

Working drawings and details of construction are made under office conditions.

Broadly speaking, it is the purpose of the College in outlining the construction courses to equip the student to solve by *office methods* any problem he may meet in ordinary practice; it is taken for granted that graver problems requiring a deep knowledge of the higher mathematics may well be left to the architectural engineer.

In the last year of the program a series of lectures are given on estimates, contracts, law, business relations and professional ethics and practice. Architects of high professional standing will give a number of lectures in this course.

A history of architecture and of the allied arts is studied in a course covering four years. The method is a combination of lectures, recitations and research.

Courses in English, history, economics and philosophy complete the curriculum.

In the Graduate Year advanced work in criticism and research is done and larger and more complicated problems are given in design.

Thesis. The senior year is given up largely to the working out of a thesis in design.

ENGINEERING PROGRAM

The science of engineering has long since outgrown the practical limits of one man's abilities. To be thorough, the engineer must specialize. One of his specializations is in Architecture. His services are needed to frame important buildings, to design their foundations and to protect adjoining property while they are in erection. The College offers the Program in Architectural Engineering because there is need of the service of the men who complete it.

Students desiring to become Architectural Engineers should have a bent for mathematics and for painstaking, exact drafting.

The program of studies differs from that of the Program in Design chiefly in the following particulars: Courses in pure and applied mathematics are given more prominence; the more important construction courses go deeper into theory; freehand work ends with the second year; the study of Historic Ornament and the Histories of the "Allied Arts" is omitted; and a relatively greater amount of time, increasing each year is spent in structural design.

The Graduate year is largely spent in solving of problems of the first order in architectural engineering.

EXPLANATION OF "HOURS."

A class hour means one hour of recitation or lecture and one to two hours of preparation. A freehand or design hour means at least two actual hours in the drafting room.

PROGRAM IN DESIGN

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
English	4	174	I	English	4	174	I
El. of Arch.	4	142	I	El. of Arch.	4	142	I
Construction	4	141	I	Construction	4	141	I
Language*	5			Language*	5		
Drawing	2	162	Ia	Drawing	2	162	Ib
Arch. Drawing	2	164	IV	Arch. Drawing	2	164	IV
Total	21			Total	21		

SOPHOMORE YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
English	3	174	II	English	3	174	II
Design	8	143	II	Design	8	143	II
Construction	3	141	II	Construction	3	142	III
History	4	200	II	History	4	180	II
Drawing	2	162	IIa	Drawing	2	162	IIb
Graphics	2	142	VI	Graphics	2	142	VI
				Theory of Plan	1	144	VII
Total	22			Total	23		

JUNIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Philosophy	4	208	X	Philosophy	4	208	X
Design	8	143	III	Design	8	143	III
Hist. of Arch.	3	140	I	History of Architecture	3	140	I
Hist. Ornm'nt.	2	141	II	Drawing	2	162	IIb
Drawing	2	162	IIIa	Sanitation	1	142	VI
Heat and Vent	1	142	IV	Electricity	1	167	III
Total	20			Total	19		

SENIOR YEAR

SUBJECTS First Term	Hrs a Wk	Pg	Course	SUBJECTS Second Term	Hrs a Wk	Pg	Course
Pol. Science	5	214	VI	Bus. Ethics	1	142	VII
History of Art	2	141	IIIa	History of Art	2	141	IIIb
Drawing	2	162	IVa	Drawing	2	162	IVb
Design	10	143	IV	Modeling	1	163	V
				Design	10	143	IV
				Thesis			
Total	19			Total	16		

*French, Latin or Spanish.

Mathematics may be substituted for the Language of the Freshman year provided the student has had at least two years of Language.

PROGRAM IN ARCHITECTURAL ENGINEERING

FRESHMAN YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Algebra	5	186	I	Anal. Geom.	5	186	II
English	4	174	I	English	4	174	I
Construction	4	141	I	Construction	4	141	I
Drawing	2	164	I	Drawing	2	164	I
Drawing	2	162	Ia	Drawing	2	162	Ib
El. of Arch.	4	142	I	El. of Arch.	4	142	I
Total	23			Total	23		

SOPHOMORE YEAR

Calculus	5	187	III	Calculus	4	187	IV
Physics	5	209	II	Calculus	1	187	V
Physics	2	211	III	Physics	5	209	II
Des. Geom.	2	164	III	Physics	2	211	III
Construction	3	141	II	Des. Geom.	2	164	III
Design	5	143	II	Construction	3	142	III
History	4	183	VII	Design	5	143	II
				Economics	5	214	VI
Total	26			Total	27		

JUNIOR YEAR

Anal. Mech.	5	156	VIII	Hydromechan.	2	157	XVI
Sanitary Eng.	2	159	XIII	Mechanics of Materials	3	157	X
Electricity	1	167	III	Sanitary Eng.	2	159	XIII
Heating and Ventilating	1	142	V	Surveying	2	154	II
History of Architecture	3	140	I	Surveying	1	154	III
Struct. Design	8	143	V	History of Architecture	3	140	I
Philosophy	4	208	X	Struct. Design	8	143	V
				Philosophy	4	208	X
Total	24			Total	25		

SENIOR YEAR

Bridges and Roofs	5	159	XIV	Grap. Stat.	5	159	XV
Drawing	2	165	VI	Bus. Ethics	1	142	I
Structural Design	10	143	VI	Structural Design	10	143	VI
				Thesis			
Total	17			Total	16		

THE SHORT PROGRAM

The scheme of studies for the Short Program comprises most of the work of the complete program that is essentially architectural.

Ordinarily, the same entrance subjects are demanded for the Short Program as for the Programs in Design and Engineering. A student who has not had the regular preparatory subjects but who is sufficiently mature and has had enough practical experience to warrant his following the work with profit, may be allowed to take up the courses in the Short Program. Mathematics and Physics must be taken in regular form if not previously studied. The ability to write correct English is a requisite for a Certificate of Proficiency in Architecture.

SHORT PROGRAM

FIRST YEAR

SUBJECTS First Term	Hrs a Wk	See For Description		SUBJECTS Second Term	Hrs a Wk	See For Description	
		Pg	Course			Pg	Course
Construction	4	141	I	Construction	4	141	I
Architectural Drawing	2	164	IV	Arch. Drawing	2	164	IV
Drawing	2	162	Ia	Drawing	2	162	Ib
Elements of Architecture	12	142	I	El. of Arch.	4	142	IV
History	4	183	VII	Design	8	143	II
				Theory of Planning	1	144	VII
				Economics	5	214	VI
Total	24			Total	26		

SECOND YEAR

Hist. of Arch.	3	140	I	Hist. of Arch.	3	140	I
Construction	3	141	II	Construction	3	142	III
Graphics	2	142	VII	Graphics	2	142	VII
Heat. and Ventilation	1	142	V	Sanitation	2	142	VI
Electricity	1	167	III	Business Ethics	1	142	VII
Drawing	4	162	IIa, b	Drawing	4	162	IIIa, b
Design	8	143	III	Modeling	2	163	V
				Design	8	143	III
Total	22			Total	25		

THE COLLEGE OF LAW

Phenomenal as has been the growth of the University in the various Colleges of Arts and Letters, Science, Engineering and Architecture, in respect of new departments formed, added facilities for teaching, increase in the number and special character of the teaching facilities, and general efficiency, nowhere does this development appear more marked than in the College of Law.

Established in 1869 and reorganized in the year 1883, the department continued its course in a modest way under the personal supervision of the Dean. Within recent years, however, it has grown from a school of fifty students in charge of one instructor to a student body numbering more than two hundred taught by a faculty of seven men. The lecture room, study hall and library, already enlarged to twice their original size, have become too small and plans are considered for the early erection of a law building which is to be devoted exclusively to the needs and work of the College of Law. At present the lecture rooms of Science and Walsh Halls are improvised and used in the administration of the department.

THE LAW LIBRARY

The law library, containing more than five thousand volumes, is adequate for the present needs of the department. It includes the commentaries, text-books and treatises of the old school of law writers as well as the works of the modern school of text writers and case book authors. The reporter system is large, comprising the entire National Reporter System, the Lawyer's Reports Annoted, the United States and Federal Reports, American Reports, English Law Reports, the Indiana Supreme and Appellate Court Reports and the Vermont State Reports. There are also the principal law dictionaries, digests, encyclopædias, leading case reports and statutes.

The Law Library is connected with the lecture room and courtroom and is kept and maintained apart from the University Library. It is in charge of the law librarian and is open to the use of students throughout the day and evening. A large, well-lighted room, fully equipped for study, is provided for the students of the department.

COURTROOM

The main lecture room is equipped with a judge's bench, jury box and officer's stations for use in the conduct of court procedure and trial practice.

COURSE OF STUDY

The prescribed course of study in the College of Law covers a period of four years and leads to the degree of Bachelor of Laws. An optional fifth year of special study in substantive law and practical prodecure leads to the Master's degree. The Degree of Doctor of Laws (LL. D) or Doctor of Civil Law (D. C. L.) presupposes the degree of Bachelor of Laws and a Bachelor's degree in Arts or Science.

Supplementing the course in law, which is complete and thorough in itself, the law students are given the advantage of special courses in public speaking and debating, history, English, philosophy and economics. At Notre Dame where conditions are so conducive to study, so free from distraction and so favorable for acquiring a thorough and practical education, the ambitious and industrious student can easily avail himself of these special courses in the other colleges of the University without in the least impairing the full efficiency of the law course itself. Indeed, the system in vogue in the University and the general environment make it possible for the earnest student to accomplish from a fourth to a third more work here than probably anywhere else in the country.

By special arrangement of studies a student may complete any of the four year courses in the College of Arts and Letters and the regular course in Law so as to entitle him to two degrees in a period of six years.

ORGANIZATION AND SYSTEM

The law faculty comprises seven resident instructors, all of whom are graduates of the leading law schools of the country and experienced in the practice of law, and three of whom have been regular judges of city, and circuit courts. Four of the faculty devote their entire time and service to the School of Law while the other members of the faculty also engage in the law practice.

The classes of the course are arranged in groups according to their relationship and the logical order of their study and with due regard to the time to be devoted to each class subject. These classes are assigned to the various instructors with a view to the instructor's special qualification and experience to teach them. The course is conducted under the careful supervision of the dean of the department to the end that the best methods may be applied and the highest degree of efficiency attained in the teaching department, thereby assuring the students the greatest possible measure of success in the course.

A special advantage to the law student at Notre Dame is his daily association with the instructors and the personal assistance rendered him and the special interest taken in him by the law faculty as well as by the administrative officers of the University.

METHODS OF INSTRUCTION

Experience at Notre Dame has confirmed the opinions of eminent law teachers that the case method alone is not adequate to teach a thorough and comprehensive knowledge of the law. Excellent as the case method is for imparting a knowledge of the particular principles of the law applicable in the cases analyzed, a general idea of the law as a whole, its main features and its universal concepts can not be learned without the aid of the text-book. Therefore the law is taught here by text-book assignments as well as cases, both explained and illustrated by the lectures and class-room talks of the instructors. In addition to these daily assignments, frequent written tests and the quarterly examinations are given, and class records are kept of the students' work.

INTRODUCTION TO THE STUDY OF LAW

As an introduction to the study of law the students are given a course of preliminary lectures to acquaint them in a general way with the system of law as a whole, its various classifications and those concepts and principles underlying the whole law so necessary to an intelligent and successful study of the various branches of the law prescribed in the course for study. These lectures may be briefly outlined as follows: the nature of law; law as it effects the individual, organized society and nations; the system of American jurisprudence; the common-law and equity systems, their origin, development and relation; our constitutional and statutory law systems and their relation to the common law; the sources of the law, custom, judicial decisions and legislation; judicial systems and the processes of the courts; higher court decisions as precedents and the reporter system; the law divided into two great branches, the substantive law and the law of procedure—rights and remedies—and these branches again divided respectively into the law of contracts, wrongs and property and practice, pleading and evidence, these in turn divided into the special branches of the prescribed course; where to find the law; how to study the law.

THE LAW AND HOW TO PRACTICE IT

The lawyer's profession is a practical one and most law students intend to practice the law. It is frequently said of the law schools of the country that their courses are not practical, that they teach the substantive law to the exclusion of the more practical branch of the law, the law of procedure.

The substantive law operates *proprio vigore* to establish the rights and obligations of parties. When such right is violated the substantive law creates a secondary right which is denominated a right of action. Then it is that the law of procedure applies, and it is the knowledge of this law that enables the practitioner to invoke the jurisdiction of the courts and the strong arm of the state to secure his client's rights and redress his wrongs. A law course, therefore, to be practical should teach not only the substantive law but also the law of procedure.

To meet this condition the law course as now prescribed at Notre Dame is intended not only to teach the law but how to practice it as well. Provision has been made for a systematic course in civil procedure and a thorough and practical court system to operate throughout the entire three years of study.

COURSE OF PROCEDURE

In addition to criminal procedure which is taught in the second year there is also a preliminary course in civil procedure consisting of the study of common-law and equity courts, the orginal writs and processes, the common-law forms of action and remedies and relief in equity. Not only does this serve as a beginning of the course in practical procedure but it enables the law student from the outset to better understand the substantive law taught through the application of the common-law actions and remedies. This course is followed in the third year by a complete course of pleading and practice at common-law, the making of issues in the various common-law actions, equity pleading in general and as applied in the federal courts, and pleading and practice under the code. The fourth year is devoted to the making of issues in the principal civil actions under the code, trial practice and appellate procedure. The course in federal procedure is also given in this year.

THE UNIVERSITY COURTS

These consist of the University Moot Court, the Notre Dame University Circuit Court and the Supreme Court of Notre Dame. These courts constitute a thorough and practical sustem and are kept in operation throughout the last three year of the law course. The University Moot Court is open to the second year law students for criminal pleading and practice immediately after the course in criminal law and procedure. Hypothetical cases are submitted to regularly chosen grand juries and prosecuting attorneys and indictments are voted and returned. Warrants are issued, arrests made and attorneys appointed for the defendants. Motions to quash are argued, pleas entered and arguments made before the court and jury on the question of conviction or acquittal. Many hypothetical cases are submitted to the students for the preparation of affidavits and indictments thereon and for argument in the court. Thus all the students are given a start in court practice in their second year. The University Moot Court is kept busy throughout the junior year in the preparation and argument of cases on the law applicable to hypothetical statements of fact, principally in civil cases. When the law of evidence is taught in course of the third year the Notre Dame University Circuit Court opens, and here the students apply all the law of procedure, pleading, practice and evidence. Throughout the senior year practice is had with a view to teaching the students how to make trial records, save exceptions and avail themselves of alleged error on appeal to the supreme Court. Each candidate for a degree is required to prepare at least one record and transcript together with an assignment of error and brief thereon in the Supreme Court of Notre Dame.

These courts are all fully organized, have their regular officers and official records. Four students are assigned to each case and all are thus made to engage in the active practice. It is thought that this system of procedure and practice will so qualify the graduate that he may with confidence in himself begin the active practice of his profession.

REQUIREMENTS FOR ADMISSION

Beginning with 1917 the Law Course will be a four-year course.

Students who have a Bachelor's degree or who have completed at least one year of college work can complete the Law course in three years.

Graduation from a four-year high school or preparatory school of recognized standing, evidenced by certificate from such school, will admit one to the freshman class of the College of Law as a candidate for the degree of Bachelor of Laws. In the absence of such certificate proof of established credits a satisfactory examination based on the schedule of studies for entrance into the various colleges of the University is required. No student may enter on the course of Law as a candidate for a degree who is not an unconditioned Freshman in class standing.

While this requirement will suffice for the present to admit one to the College of Law, yet the Law Faculty as well as the University Faculty strongly urge upon the prospective law student that he enter upon the six-year period of study for the completion of a course in the College of Arts and Letters and the Law course, thereby to be graduated as the educated lawyer with greater assurance of success in his chosen profession of the law and with those superior qualifications which will enable him to achieve success in the other fields of life's endeavor where alone education can succeed.

If for any reason a student cannot devote so long a period of time to the course, the four year course will include at least one year of work offered by the College of Arts and Letters. Some of the subjects taken in this year will be English, Economics, History, American Government, Philosophy and Latin. If the student has not had Latin in his preparatory course there will be special classes in these subjects organized for the students in the College of Law.

Students coming from other recognized law schools will be admitted to such advanced standing in the College of Law as they have attained, such standing to be established by certificate from the former school or to be determined upon examination.

THE PRESCRIBED STUDIES

The classes in each of the groups of the following schedule follow each other in the order named, each having its allotted time and all to be completed within the thirty-six weeks period of the year. The logical order of the classes for study, however, is not to be found in each group but runs throughout the several groups.

The elective studies to be chosen are subject to the advice and direction of the Director of Studies of the University and the Dean of the College of Law.

In addition to the benefits of the University Court System, the senior law students have opportunity to attend the sessions of the Circuit and Superior Court of St. Joseph Country in South Bend, and also to examine the public records of the county for practical work. An elective course is provided for New York students in New York State Code Pleading and Practice.

PUBLIC SPEAKING AND DEBATING

The course in Public Speaking and Debating of the College of Law has been carefully designed with a view to the practical needs of the successful lawyer. Its aim is to develop in each student the power of convincing and persuasive speech and manner in public and forensic address. It emphasizes the qualities of clear enunciation, directness, and earnestness, which mark the effective speaker in the court room, or at the public or social gathering. The work covers three years and comprises for the most part practical training in debating and in delivering prepared addresses and impromptu speeches, followed by individual criticism and suggestions by the instructor. Written public addresses, before being prepared for delivery, must be handed to the instructor, and these will be given special attention and criticism, both in writing and in personal training by the instructor with a view to delivery in public. Text-book work is omitted in this course, except in the first year with such students as give evidence of serious defects either in voice or in enunciation, and chief emphasis is placed upon the careful observation of the work of each student, with practical criticism of his defects and helpful suggestions for their correction.

The subjects chosen for work in this course will embrace, besides political, patriotic, and sociological topics of permanent interest, the important current national questions. It is believed in this way, the law student will be trained to become not only an able advocate in court, but likewise an influential public citizen, in the community, the state, and the nation.

I. During the first year, in addition to a reasonable and judicious study of the essential principles that underlie good public address, the work consists of brief discussions and debates on important public questions, and prepared speeches and addresses of moderate length, with a beginning made in impromptu talks. A thorough training in parliamentary practice will, likewise, form a part of this year's work.

II. During the second year, longer speeches and debates will be required, and the writing and preparing of formal addresses will begin. Considerable attention will also be given during this year to impromptu speeches, and at intervals the class will organize itself into a practical legislative assembly to discuss vital questions of the day and to apply the rules of parliamentary procedure.

III. In the third year every man will be required to prepare his debates, speeches and addresses in such a manner and of such length as to be suitable for delivery in public, and to be ready on short notice to appear and deliver one of these speeches on a public occasion. At this stage in the student's training, he is expected to be able, on any occasion, to speak fluently, intelligently and effectively on a question of general public interest.

GRADUATE COURSE

The graduate course leading to the Master's Degree is made up of studies in the following subjects:

Jurisprudence, Roman Law and Modern Codes, International Law, Admiralty, Administrative Law, Legislative Bill Drafting, Statutory Construction, Medical Jurisprudence, General Review of the Substantive Law and Prodecure, Practice in the University Courts.

SCHOOL OF LIBRARY SCIENCE

Two years of college work are required for admission to the School of Library Science. Students must have a reading knowledge of French, German, Spanish, and Italian. The degree of Bachelor of Library Science is offered for the regular four year program of studies. A certificate is given to those who complete the two year outline of work.

I. **Bibliography.** Reference work, subject bibliography, American trade bibliography, book selection, public documents, history of libraries, books and printing.

II. **Cataloguing.** Document cataloguing, shelf-listing, indexing, classification, loan administration, library economy, order work, accessioning and binding.

III. **Administration.** Library administration, library extension, library construction and equipment.

SCHEDULE OF CLASSES

FRESHMAN YEAR

FIRST TERM			SECOND TERM		
Subjects	*Weeks*	*Periods a Week*	*Subjects*	*Weeks*	*Periods a Week*
Elements of Law	18	2	Persons and Domestic Relations	18	2
Contracts	18	5	Criminal Law and Procedure	18	5
Public Speaking I	18	1	Public Speaking I	18	1
English I	18	4	English I	18	4
Economics VI	18	5	History VII	18	4
Latin A	18	5	Latin A	18	5
or			or		
Elective	18	4	Elective	18	4
Total		21 or 22	Total		21 or 22

SOPHOMORE YEAR

Sales of Personal Property	9	5	Torts	12	5
Bailments and Carriers	9	5	Agency	6	5
Common Law Actions and Procedure	18	2	Common Law Pleadings and Practice	18	2
Moot Court—Criminal Procedure	18	1	Moot Court—Civil Procedure	18	1
Public Speaking II	18	1	Public Speaking II	18	1
Philosophy	18	4	Property I	18	2
Politics II	18	4	Philosophy	18	4
Elective	18	3	Elective	18	5
Total		20	Total		20

JUNIOR YEAR

Property II	18	5	Property III	18	5
Bills of Exchange and Promissory Notes	13	5	Conveyancing, Mortgage, Wills, Decedent's Estates, Probate Practice	13	5
Damages	5	5	Insurance	5	5
Evidence	18	5	Constitutional Law	18	3
Code Pleading	18	2	Common Law and Equity	18	2
University Circuit Court	18	1	Code Procedure	18	2
Equity	18	2	University Circuit Court	18	1
Public Speaking III	18	1	Public Speaking III	18	1
			Trusts	18	2
Total		21	Total		21

SENIOR YEAR

Private Corporations	18	5	Public Service Corporations	5	5
Suretyship and Guaranty	10	5	Municipal Corporations	13	5
Partnership	8	5	Conflict of Laws	18	2
Pleading and Practice—Common Law, Code and Appellate Procedure	18	2	Pleading and Practice—Common Law, Code and Appellate Procedure	18	2
University Circuit Court Trial Records for Appeal	18	1	University Circuit Court Trial Records for Appeal	18	1
Supreme Court of Notre Dame—Transcripts, Assignments of Error and Briefs	18	1	Transcripts, Assignments of Error and Briefs	18	1
Legal Ethics	18	1	Federal Jurisdiction and Practice	18	2
Elective	18	2	Bankruptcy	18	1
			Elective	18	2
Total		17	Total		16

Courses of Instruction

(In the description of the courses of instruction an hour means forty-five to sixty minutes in the recitation or lecture room and at least one hundred and twenty minutes in the laboratory, the drawing room or the shop. A term means a half year, or eighteen weeks.)

AGRICULTURE

The subjects are given in the order in which they appear in the schedule of classes.

Live Stock Judging and Selection. In this course the students are made familiar with the various types of horses, cattle, sheep and swine. Points of excellence as well as deficiencies are considered. Animals representing the different types and breeds are brought before the class and practical work of judging is supplemented by the use of lantern slides connected with the lecture. Each breed is discussed with reference to its origin, history and developments.

[Three hours a week for one term.]

Breeds and Market Classes. A study of horses, cattle, sheep and hogs, from both the market and show yard standpoint is made. Lectures, references. reading and laboratory work on the recognized classes and grades of market animals and on the acceptable types of pure bred animals used for breeding purposes, are given. Considerable time will be spent in familiarizing the student with the important characteristics of the different classes and various breeds by studying representative specimens and by exercises in stock judging.

[Three hours a week for one term.]

Horticulture I. A study of the fundamental activities of plant life with special reference to the growth of orchard and garden crops, the plants as influenced by normal and abnormal temperatures; by its supply of water, light, food, etc; and the effect of parasites, soil conditions, etc. A further study is made of such practical details as propagation, seed selection, transplanting, pruning, spraying, frost protection, etc.

[Two hours a week for one term.]

Horticulture II. A study of the origin, history, characteristics, and management of orchard and garden fruits. Further consideration is given to harvesting, marketing, cold storage, etc. Judging and scoring of apples, pears, and other available fruits. Prerequisite, Horticulture I.

[Two hours a week for one term.]

Forage Crops. This course includes a study of forage and fiber crops, with special reference to history, method of development, growth, distribution, culture, and uses. The culture and adaptation of perennial grasses for hay and pasture are considered. Annual forage crops including sorghums, rape, millets, legumes, and cereals, are studied with reference to their production and uses for pasture, silage, soiling, fodder, and hay. A thorough study is made of all the important grasses and clovers that can be grown for meadow and pasture purposes. The student is given an opportunity to become familiar with the structure and growth of many forage plants. A study is made of the different commercial tame grasses and clovers and their seeds, with special reference to quality, purity, and freedom from adulterants and weed seeds.

[Five hours a week for one term.]

Grain Growing. This course is a study of cereal crops, largely from a production standpoint. The principal crops considered are corn, wheat, oats, barley, rye, rice, buckwheat, and grain sorghum. The origin, history of development, common diseases and insect enemies and means of prevention, are studied. The cost and most economical means of production, facts designating the best place in a rotation of crops, proper seed bed preparation, cultural methods, and factors influencing maximum production, receive highest consideration. The laboratory work consists of grain judging, germinating of seeds, planting, and treatment of smuts, grading and cleaning.

[Five hours a week for one term.]

Farm Mechanics. The study of power machinery, setting up and taking apart grain binders, mowers, drills, corn harvesters, corn planters, plows, cultivators, and proper adjustment of machines. The purpose of this course is to acquaint the student with the factors underlying wise selection, and proper care of farm machines.

[Four hours a week for one term.]

Agricultural Engineering. A study of the uses of concrete on the farm, tile drainage, construction of fences, barns, sheds, and feed racks for cattle and sheep, and the methods of determining the area of fields; practice in laying out tile drains and in drafting working drawings.

[Four hours a week for one term.]

Vegetable Gardening. A study of the principles of vegetable growing for home and market. Planning and care of the garden, cultivation, fertilizers and manures, varieties of vegetables, construction and management of hot beds and cold frames, seed sowing, transplanting, harvesting, and marketing are fully considered.

[Four hours a week for one term.]

Soils. This course comprises a study of the physical nature of soils, and deals with the origin of soils and their formation; soil texture as influencing aeration; capillarity, and diffusion; soil moisture and means for its conservation; the washing of soils and preventive measures; the effect of different methods of cultivation upon the liberation of plant foods; soil moisture, and soil temperature; the use of tillage implements and their effect upon the physical condition of the soil. The laboratory demonstrates the principles of soils discussed in the class.

[Five hours a week for one term.]

Soil Fertility. This course involves a study of the food combinations of plant food upon plant growth; and the effect of different crops and different systems of farming upon the depletion of soil fertility; the use of barnyard manure, including proper methods of handling, preserving, and applying it; a determination of the needs of soils for commercial fertilizers and the kinds of fertilizers to apply.

The Laboratory exercises supplement the class work in demonstrating the effect of fertilizers and manures upon plant growth.

[Four hours a week for one term.]

Entomology. A study of external structures, classification, habits, and local distribution of insects and their native relatives. Life history of injurious and beneficial species, lectures and text-book, laboratory and field work in collecting and mounting the more common local insects, the classification of the insects collected, the study, aided by dissections and drawings, of the external anatomy of various types. Much time will be devoted to the study of insects of economic importance and to remedies for the injuries of the more important insect pests. General and special methods of insect control.

[Four hours a week for one term]

Feeding Farm Animals. This course involves a study of the digestive system and the processes of nutrition, and of the theory of practical economy of rations, both for maintenance and for the fattening of all classes of farm animals. A comprehensive study is made of the various feedstuffs offered in the local and general markets of the country, and the students are given training in compounding rations for different kinds of animals. Valuable observations are made in this subject on the farms visited by the students, and the varied experiments in progress on the College farm also afford facilities for illustrative purposes.

[Three hours a week for one term.]

Agricultural Economics. This course will include a consideration of the general principles of agricultural economics, the factors of production, improvement of the business side of farming, farm bookkeeping, cost accounts, tenancy, conservation, rural credits, marketing, etc. This course will be found profitable to general farmers, agricultural specialists, and to general students who wish to understand some of the economic problems of our greatest industry. Text, lectures, reports, assigned readings, and discussions. Open also to other advanced students.

A brief presentation of the essentials of business law will be given.

[Three hours a week for one term.]

Rural Sociology. This course is designed to put students in touch with the fundamental principles underlying the general social organization of rural life, and also to give them such knowledge of ways and means of community improvement as will enable them to render positive service to their respective communities. Among other matters will be considered the following: rural vital statistics; the shifting of the rural population; community hygiene and sanitation; good roads; the rural Catholic church; the rural school; community cooperation for community betterment. An essential feature of the course will be a study of the students own community, with a view to recommending action for the betterment of the general social, intellectual, moral and economic conditions. Lectures, assigned readings, reports and discussions.

[Two hours a week for one term.]

Agricultural Education. The purpose of this course is to give a better understanding and appreciation of present day tendencies in agricultural education. The work will consist of lectures, assigned readings, reports and discussions on the principles underlying the organization and teaching of agriculture in elementary and high schools and college. The origin, development, and effect of the movement for agricultural education in Europe and the United States will be considered. The student will also become familiar with the work which is being done in other counties and other States.

[Two hours a week for one term.]

Stock Breeding. This course embraces the general principles of heredity, variation, sex-limited inheritance, prepotency, fertility and sterility, systems of breeding, and the influence of pedigree and herd-book standards.

[Three hours a week for one term.]

Farm Poultry. This course takes up the problems of poultry management. Lectures on the poultry house and its equipment; care and management of the laying flock; marketing eggs; hatching and rearing by natural methods, incubation, brooding, feeding, etc. This course is designed to give such a general knowledge of poultry keeping as is necessary for moderate sized flocks on the ordinary farm.

[Three hours a week for one term.]

Farm Operations. The purpose of this course is to acquaint students with everyday farm operations such as harnessing a team, naming parts of harness, hitching team to farm implements, plowing, ability to drive a team, knowledge of common farm practice in feeding animals, distinguishing common breeds of farm animals ability to handle farm animals, milking cows, distinguishing common breeds of poultry, knowledge of a fair yield for a few farm crops, knowledge of common practices in planting the ordinary farm crops, identifying a few common varieties of apples, and familiarity with common vegetables of the farm garden, as well as tilling, plowing, and general farm practices.

[Two hours a week for one term.]

Farm Management. The purpose of this course is: First, to assemble and correlate the principles involved in the agricultureal subjects taught in the institution; second, to aid the student in applying these principles to the successful management of a farm. Lectures are given on the points to be considered in the selection of a farm, on types of farming, on the planning and arrangement of the farm-stead and of the fields and the crops; on the ease, cost, and methods of marketing different farm products. Different regions are discussed with especial reference to their adaptability to certain types of farming. The labor question is analyzed. The distribution of capital, its relation to profit, and the relation of live stock to crop production and to the maintenance of a permanent agriculture, receive consideration. Methods of renting and leasing farms are discussed, and their important points are emphasized. The layout, arrangement of buildings, cropping systems, and business organizations of actual farms is studied and replanned by the student. Various regions are studied as to the types of farming. The factors affecting profits are carefully studied. Practice is given in watching the daily markets.

[Five hours a week for one term.]

Dairying. A general study of the secretion, composition, care and handling of milk; a study of cream ripening and churning; use of the Babcock tester and testing of cows with special reference to adaptation to farm condition.

[Three hours a week for one term.]

Cooperative Marketing. The purpose of this course is to put the student in touch with the principles underlying cooperation and the science of marketing. A detailed study will be made of the rise and development of the various forms of agricultural cooperation in Europe and America, including cooperative buying, cooperative stores, cooperative marketing, general farmers' organizations, and rural credits. An attempt will be made to ascertain the essentials of successful cooperative effort along each of the lines studied, especial attention will be given to marketing and cooperation in Indiana.

[Three hours a week for one term.]

ARCHITECTURE

COURSES OF INSTRUCTION

I.

Ancient and Classic Architecture. The work of the ancient Egyptians, Babylonians, Greeks and Romans to the reign of Diocletian.

Mediæval Architecture. A study of the development of architecture from the fifth to the fifteenth century. Mosaics, sculpture, stained glass and iconography are studied in relation to the architecture of this period.

Renaissance. A study of the Humanist movement of the 15th century in Italy, the Renaissance in France and England. French and Italian landscape architecture.

Modern. The Gothic and classic revivals; national traditions and taste in Europe during the 19th century; modern German architecture; European and American city plans and park systems; colonial architecture in the U. S. European influence in America.

[Three hours a week for two terms.]

II.

Ornament. Color decoration in stained glass and mosaic; tapestries and furniture design are studied technically and historically.

[Two hours a week for one term.]

HISTORY OF ART

III.

(a) **History of Painting.** A study of the great periods in the various schools of painting from the Renaissance in Italy to the present time.

[Two hours a week for one term.]

(b) **History of Sculpture.** A study of classic, medieval and renaissance sculpture, especially in its relation to architecture.

[Two hours a week for one term.]

CONSTRUCTION

I.

The first year work covers the ordinary building trades where extensive calculations are not involved Building materials, masonry, carpentry, roofing, interior woodwork, plastering and painting with the specifications of each trade are studied and working drawings of a simple dwelling are made.

[Four hours a week for two terms.]

II.

Steel Construction. Ores and manufacture of iron and steel; theory of beams, designing, detailing and shop work of beams; columns, calculation of single section and built up steel columns, girders, steel frame work for buildings, wind bracing and fireproofing, foundations, soils piling.

[Three hours a week for one term.]

III.

Re-enforced Concrete. Floor slabs, beams, girders and columns.

[Three hours a week for one term.]

In all courses in construction students are required to draw a series of plates illustrating the methods of making working drawings and to become acquainted with the typical forms of construction.

IV.

Heating and Ventilation. Theory and practice of heating and ventilating buildings.

[One hour a week for one term.]

V.

Sanitation. Water supply and purification; sewage disposal; plumbing of buildings.

[One hour a week for one term.]

VI.

Graphical Statics. Analytical and graphical statics; analysis of stresses in trusses, design of roof trusses.

[Two hours a week for two terms.]

VII.

Professional Practice. Laws affecting clients and architects; building laws, professional ethics.

[One hour a week for one term.]

DESIGN

I.

Elements. A technical detailed study of the construction and appropriate use of walls, openings, the five orders of Vignola, arches, vaults, roofs, by means of carefully drawn and rendered plates and the use of these elements in simple problems in design.

[Eight hours a week for two terms.]

The study of design is conducted by means of problems and criticisms. The problems vary in length from sketch problems, requiring only a few hours for their solution to major problems requiring four weeks or longer.

With each problem is given definite requirements such as might be imposed by a client. After the various studies are made and the drawings presented they are marked and criticised by the instructor.

These courses are divided as follows:

II.

Problems in composition involving the use of elements studied in the first year.

[Eight hours a week for two terms.]

III.

Problems in composition requiring the study of plans.

[Eight hours a week for two terms.]

IV.

Larger architectural compositions including interior decoration and landscape design.

[Ten hours a week for two terms]

Senior Thesis. In the second term of the senior year the student must work out a thesis design for a large architectural group including details.

V.

Structural Design. These courses have the same relative importance as the courses in design. The analogy goes further, the work is given as major and minor problems of varying degrees of difficulty and is judged and marked in the same manner. The scope of the problems will vary from the making of an ordinary footing plan to the framing of the structural steel of a large dome.

[Eight hours a week for four terms. Ten
hours a week for two terms.]

VII.

Theory of Planning. The study of the requirements of different groups of buildings:

(a) Domestic buildings.
(b) Ecclesiastical planning in relation to service.
(c) Hospitals, schools, libraries, public buildings.

[One hour a week for one term.]

ASTRONOMY

Astronomy. Practical. This course is designed to meet the requirements of Civil Engineering students and to give them the training and information necessary for intelligently executing certain departments of work to which they may be assigned in the course of their professional career. The course comprises a study of astronomical instruments as well as instruments of more precision than those used in ordinary surveying. The adjustments and use of these instruments are considered, and instruction is given in methods of observation and computation; different methods for finding latitude, longitude and time are studied in detail, and the methods for finding right ascensions and declination; methods of making observations and their adjustments, and discussion of errors. Conversion of solar time into sidereal, and sidereal time into solar.

A Course in Least Squares is given with Practical Astronomy and comprises a study of a review of the theory of probability; errors and their probability, the probability curve, and probability integral; also the solution of observational equations, average error, mean error, approximate formulas and propagation of errors; normal equations and formulas fitted to observations.

[Three hours a week for one term.]

BACTERIOLOGY

Lectures and Laboratory Work. Lectures on the form, structure, reproduction and classification of bacteria. The relations of bacteria to disease, etc. The principles of sterilization, thermal and chemical, are pointed out. The early part of the laboratory work is occupied in the preparation of the various culture media and in studying pure cultures of certain non-pathogenic bacteria in these media. Observations on the microscopic characteristics of bacteria and special attention to the microscopic technique in bacteriological work. Later on in the course some time is devoted to practice in the isolation and identification of pathogenic germs by the various staining processes. Inoculation of animals. Bacteriological investigations of water, air and soil.

[Five hours a week for one term.]

For Bacteriology II. see Medicine.

BIOLOGY

I.

Elementary principles of Biology, also Human Physiology. This course is primarily intended for students of the College of Arts and Letters.

[Four hours a week for two terms.]

BOTANY

I.

Botany. (a) Organography. Lectures and recitations on the morphology of the root, leaf, flower, fruit and seed; the development of the embryo and the processes of pollination and fertilization. (b) Cytology and Histology. The study of the vegetable cell, of its products, of cell formation, of plant tissues. (c) General Morphology. The structure, growth, reproduction and general classification of the algae, fungi, lichens, mosses, ferns, and the higher plants. (d) Plant Physiology. Special notes on Cytology, Plant Histology and Plant Anatomy by the professor.

[Four hours a week for two terms.]

II.

Botanical Laboratory. Supplementary to Course I. Special microscopical study of thallophyta, bryophyta, pteridophyta and spermaphyta referred to in Course I. Drawings must be made of all plants examined. Plants under these headings are collected and put before the student that he may become familiar with their morphology, structure and classification. The course is to accompany or to be preceded by Course I. Provision is also made in this course for students in pharmacy to take a special laboratory course in pharmaceutical botany. Study of the determination and classification of the simpler plants. The analysis of the phanerogams occupies the time during the spring months and the student is made familiar with the habitat and characteristics of the local flora. *Special Notes for Histology.*

[One laboratory hour a week for two terms.]

III.

Advanced Botany. Lectures, recitations, demonstrations. The work of this course is essentially the same as that laid out in *Strasburger's* or *Vine's* text-book of Botany. Special study is made of the physiology, ontogeny, phylogeny, ecology and classification of plants. Special notes by the professor.

[Three hours a week for two terms.]

IV.

Laboratory for Advanced Botany. Supplementary to Course III., and either following or accompanying it:

(a) **Advanced Plant Histology and Physiology.** Half of the time alloted for laboratory work is devoted to plant histology and physiology. The student is required to study practically the method of killing, fixing, embedding, sectioning, staining, mounting and drawing of plant tissues.

(b) **Plant Classification Advanced.** The other half of the laboratory work is devoted to the determination and classification of the more difficult plants, the compositae, grasses, mosses, myxomycetes, etc. Herbarium study is required, as well as preparing and collecting plants for preservation. During spring and autumn frequent excursions into the neighboring fields and woods are made for the purpose of studying and collecting for preservation the local aquatic and land flora. [Three hours a week for two terms.]

V.

Systematic Botany. Principally laboratory and herbarium work in special groups of phanerogams and cryptogams. Study of nomenclature and classification of plants. This course is designed to meet the needs or inclinations of students specializing in botany. Library, reference books and seminar work.

VI.

Botany. Lectures and recitations.

The study of the vegetable cell, structure and the development of tissues of medicinal plants. Special emphasis is laid upon the sources and preparations of crude drugs.

The study of the various parts of the flowering plants namely root, stem, leaf, flower, fruit and seed.

[Four hours a week for one term.]

VII.

Botany, Laboratory. Notes are given on the principles and methods of killing, fixing, imbedding, sectioning, staining, mounting, and drawing. Practical application of modern methods in a study of karyokinetic and direct cell division.

The student is then required to make use of his theoretical knowledge and determine by analysis no less than twenty-five plants most of which are used as medicines.

[Three hours of laboratory a week for one term.]

Graduate Work in Botany. (a) Original research in systematic botany. (b) Plant histology and cytology. Preparatory to the Master's or Doctor's Degree.

CHEMISTRY

I.

(a) **General Chemistry.** A minor course dealing with the general principles of chemistry and embracing a study of only the commoner elements and their typical compounds.

[Four hours a week for one term.]

(b) **A Laboratory Course** covering in the laboratory the work of Course (Ia.) and designed to accompany it.

[Two hours a week for one term.]

II.

Advanced Inorganic Chemistry. Lectures and recitations. A complete study of the elements and their most important compounds, following the classification based on Mendeléeff's Law, and including a discussion of the theories of the science.

[Five hours a week for one term.]

III.

Quantitative Analysis. A Laboratory course to accompany Course II., the work consisting of the preparation by the student of the elements and their more typical compounds, determination of molecular weights, verification of the fundamental laws of chemistry, etc. During the latter part of the course, there is taken up the study of the reactions involved in the separation and detection of the more common inorganic bases and acids, the analysis of salts, mixtures of salts, and the complex substances, such as earths, ores, ashes, etc. One hour lecture or recitation, four laboratory hours. [Five hours a week for one term.]

IV.

(a) **Qualitative Analysis.** A course arranged for the students in Pharmacy and Agriculture, comprising a study of the commoner metals and acids, their reactions and separation. One hour lecture or recitation, four laboratory hours.

[Five hours a week for one term.]

(b) **Quantitative Analysis.** Course suited to the needs of the students in Pharmacy and Agriculture, comprising the determination of substances, both gravimetrically and volumetrically. One hour lecture or recitation, four laboratory hours.

[Five hours a week for one term.]

V.

Quantitative Analysis. A laboratory study of the principles involved in the quantitative separation and estimation of substance, both gravimetrically and volumetrically. Complete analysis of a number of simple salts, like barium chloride, with partial analysis of many complex substances. Lectures and recitations

[Four hours a week for two terms.]

VI.

(a) **Elementary Organic Chemistry.** Lectures and recitations. A systematic study of the hydrocarbons and their derivatives, and the investigation of their properties. Special attention is given to the aliphatic and aromatic series.

[Four hours a week for one term.]

(b) **Experimental Organic Chemistry.** A course fitted to accompany the preceding, involving the preparation by the student in the laboratory of the most important and typical organic compounds and the investigation of their properties. Fifteen special reactions. Notes by the professor.

[Three laboratory hours a week for one term.]

VII.

(a) **Urine Analysis.** A course of laboratory exercises in the methods employed in the detection and estimation of the constituents of urine, pathologic as well as normal.

[One hour a week for one term.]

(b) **Toxicology.** Symptoms and treatment of poisoning. A chemical and physical examination of the common poisons to familiarize the student with their properties. Attention is also given to their separation from food and animal tissue.

[Two hours a week for one term.]

VIII.

Technical Chemical Analysis. Advanced courses intended for students specializing in chemistry. Special courses, at the option of the student, in

1. **Gas Analysis.**
2. **Water Analysis.**
3. **Commercial Organic Analysis.**
4. **Oils and Fats.**
5. **Iron Analysis.**

Text-books and current journals.

[Five to fifteen hours a week for two terms.]

IX.

(a) **Advanced Organic Chemistry.** An advanced course, intended for students specializing in chemistry. Lectures, recitations and discussions of special subjects of organic chemistry, synthetic chemistry, isomerism, and stereochemistry. Text-books and special reference works. [Three hours a week for two terms.]

(b) **Advanced Organic Laboratory.** The time is spent principally in the making of organic preparations by methods demanding special care, skill and accuracy in the student.

[Six to eight hours a week for two terms.]

X.

Advanced Organic Laboratory. This course is for students in Pharmacy. Ultimate organic analysis, qualitative and quantitative; analysis of carbon, hydrogen, the halogens, sulphur and nitrogen in organic compounds by the various methods; also the determination of molecular weights of organic compounds. Text-books, special notes and reference work.

[Six to eight hours a week for one term.]

XI.

(a) **Electro-Chemistry.** Lectures and recitations on the principles of electro-chemistry and their application in the chemical industries, separation of metals, the preparation of chemical elements and electro-synthesis of compounds.

[Two hours a week for one term.]

(b) **Electro-Chemical Laboratory.** A laboratory course accompanying Course XIa. Experiments demonstrating the laws and principles of electro-chemistry, electrolysis, electro-synthesis and electro-metallurgy.

[One hour a week for one term.]

(c) **Electro-Chemical Analysis.** A laboratory course for those who have completed (a) and (b). Quantitative determination and separation of metals and anions electrolytically using stationary and revolving electrodes, the mercury cathode and their combinations.

[One hour a week for one term.]

XII.

History of Chemistry. The subject is divided into topics and epochs of special interest in the development of chemistry as a science. These are discussed at length, together with the biographies of the men who aided in their development. Lectures and recitations. Seminar and journal work for advanced students. Text-book; reference to chemical periodicals.

[Three hours a week for one term.]

XIII.

(a) **Physical Chemistry.** Lectures and recitations. A mathematical exposition of chemical theory on the subject of gas density, solutions dynamics, the phase rule, thermochemistry, photo-chemistry, etc.

[Three hours a week for one term.]

(b) **Experimental Physical Chemistry.** Laboratory work to accompany Course XIII (a). Vapor density methods, calorimetric demonstrations, molecular weight demonstrations by the freezing and boiling point methods, etc.

[One hour a week for one term.]

XIV.

Industrial Chemistry. Lectures, recitations and laboratory work. The consideration of chemical manufacture, fuels, etc., and the preparation in the laboratory of chemically pure substances, organic and inorganic. Special reference books and journals.

[Three hours a week for two terms.]

XV.

Advanced Quantitative. Mostly laboratory work in special methods for gravimetric and volumetric determinations of inorganic substances. Special reference work.

[Five hours a week for one term.]

For Physiological Chemistry XVI., see Medicine.

Research Work. Special facilities are offered to graduate students desiring to do original research work in chemistry, preparatory to the Master's or Doctor's degree.

CHRISTIAN DOCTRINE

All Catholic students are obliged to attend the courses in Christian Doctrine. The text used is the Exposition of Christian Doctrine by a Seminary Professor. The courses, I., II., III. are prescribed.

I. **Moral.**

II. **Worship.**

III. **Dogma.** Important questions of Church History will be discussed in this course.

Sacred Scripture. There will be selections from the Bible for each course, so that the whole Bible will be read in the three years' course.

IV. **Advanced Work in Christian Doctrine.** Special questions. This is an elective course.

V. **Church History.** An elective course for those who desire a more extended and a more detailed presentation than is given under III.

CIVIL ENGINEERING

I.

Descriptive Geometry. In this course are considered problems on the point, right line, and plane; single curved, double curved, and warped surfaces;

problems relating to tangent planes to single curved, double curved and warped surfaces; intersection of surfaces; spherical projections, orthographic, stereographic; globular, cylindrical, and conic projections; construction of maps, shades and shadows; linear perspective; isometric projections; theory and plates. Numerous practical problems and exercises requiring the application of the principles of Descriptive Geometry are added by the instructor.

[Three hours a week for two terms.]

II.

Surveying. This course comprises the whole theory of land surveying and leveling; the use and adjustment of the transit, compass, level, and plane table; methods of measuring; relocations of boundaries; supply omissions; obstacles to measurement; computations; field notes and plots; laying out land; parting off land; dividing up land; public land survey.

[Two hours a week for one term.]

III.

Surveying. Field practice and application of theory; adjustment and use of instruments in the field; solution of problems in the field, the theory of which is taught in the class room; practice in keeping field notes; computation and plots.

[One hour a week for one term.]

IV.

Surveying. This course is a more complete treatment of the theory of Surveying than Course II. It treats of the adjustment, use, and care of all kinds of engineering instruments; problems pertaining to solar attachment; topographical surveying with the transit and stadia; determining Hydrographic surveying which comprises a study of the methods of making soundings and locating the same; the use of bench-marks, guages, and water levels; stream measurements, methods and instruments used. City surveying, including a study of re-surveys, topographic surveys, city plan, location of streets, width of grades, field notes, indexing and records.

[Four hours a week for twelve weeks.]

V.

Surveying. Exercises in the field in the adjustment and use of engineering instruments; stadia and plane surveying in the fields, leveling; practice in hydrographic surveying.

[One hour a week for one term.]

VI.

Geodesy. This is an elementary course prescribed for Civil and Mining Engineering students and comprises a study of the instruments and methods of observation, base measurements and field work of the triangulation; method of least squares, elementary course; calculation of the triangulation, the theory of probable errors; geodetic latitudes, longitudes, and azimuths. This is followed by a brief discussion of the figure of the earth.

[Four hours a week for six weeks.]

VII.

Railroad Surveying. This course comprises all the theory pertaining to reconnoissance and preliminary surveying for a railroad; theory and maximum economy in grades and curves; location of curves by deflection angles and offsets; obstacles to location of curves; special problems in curves; theory of compound curves; turnouts and crossings; curving the rail on curves and elevation of outer rail; easing grades on curves; vertical curves; earthwork and prismoidal formula; theory of excavation and embankment; correction in excavation on curves; cross-section leveling; theory of the transition curve and practical applications.

[Four hours a week for one term.]

VIII.

Railroad Surveying. Exercise in the field; staking out and running tangents, simple, compound and transition curves; execution on the ground of many problems previously treated theoretically; survey for a short line of railroad, leveling, cross-section work, and setting slope stakes; making profiles and maps; calculating the necessary excavations and embankments and cost of construction; culverts.

[One hour a week for one term.]

IX.

Analytic Mechanics. The aim of this course is to prepare students of engineering for the study of the courses of applied mechanics. The course comprises a study of the fundamental principles of statics, kinematics and kinetics. The subjects selected are studied with the object of thoroughly preparing the engineering students to pursue the technical and practical branches of their respective courses. Some of the topics considered in this course are: work, energy, conservation of energy; power, composition and resolution of forces, center of gravity, center of mass, moment of inertia, acceleration, dynamics of rigid bodies, laws of friction, etc.

[For Civil Engineering Students, five hours a week
for the first term. Three hours a week
for the second term.]

[For Students in Electrical, Mechanical, Chemical,
and Mining Engineering, five hours a
week for one term.]

X

Mechanics of Materials. This course is intended to meet the requirements of engineering students, and to prepare them, by study of the action and effect of forces on beams and structures, to design economically and intelligently the parts entering into a complete structure. The course comprises a study of the elastic and ultimate strength and ultimate deformation of the materials of engineering, their properties and method of testing, and discussion of cases of simple stresses. The general theory of beams including cases of simple and cantilever beams, overhanging, fixed and continuous beams is thoroughly investigated. Columns are examined according to Euler's, Rankin's and other formulae, and results compared. Some of the other subjects considered in this course are torsion of shafts, the transmission of power by shafts, apparent combined stresses, such as flexure and compression, flexure and torsion, etc. Compound columns and beams, reinforced concrete beams, plate girders and other forms. Then is studied the subjects, resilience and work, impact and fatigue, true internal stresses, centrifugal tension and flexure, unsymmetric loads on beams, the course closing with a study of the mathematical theory of elasticity.

[For students of Civil Engineering, five hours a week for one term.]

[For students of Electrical, Mechanical, Mining and Chemical Engineering, three hours a week for one term.]

XI.

Roads and Pavements. This course is intended to familiarize the student with the practical details of laying out and constructing highways, the method of drainage, grading, and most suitable road covering, the improvements of streets in cities and materials used for paving and covering. The manner of preparing the street before paving is placed in position is fully considered and illustrated. The course includes a thorough discussion of the theory of pavements and a description of the various materials used, such as cobble and stone-block, asphalt, brick, wood and broken stone pavements. The method of preparing plans and specifications for the various conditions arising are considered and original plans are prepared by students. Attention is also given to the construction of street-car tracks in paved streets. [Two hours a week for one term.]

XII.

Engineering. This course is taken by students of Civil Engineering in the Senior year and teaches the best approved methods of constructing engineering works and the styles of structures suitable for different localities. The study is quite comprehensive, including the general theory of the arch and application of the voussoir arch; the theory of earth pressure, and the design of retaining walls; foundations suitable for structures of various classes in connection with which the student becomes acquainted, not only with the methods for ascertaining the bearing power of the foundation, but also the means for constructing deep foundations. The methods for tunnel construction, irrigating canals, river improvements, are included in the course and given by text-book and lectures. The part pertaining to masonry construction includes a study of the properties of stone, brick, mortar, the manner of testing foundations under water, the crib and open caisson process, the pneumatic process, the theory of masonry arches and design, arch centers, selection of site for bridge piers and arrangement of spans, the details of construction of bridge piers and

manner of location, specifications for masonry, etc.
[Five hours a week for two terms.]

XIII.

Sanitary Engineering. This course is a study of the principles and methods of drainage and disposal of sewage in populous districts: shape, material and calculation of sewers; catchbasins, flushing and ventilation; separate and combined systems compared; pollution of rivers; chemical precipitation; results and costs of purification; general municipal and domestic sanitation; inspection of neighboring works.
[Two hours a week for two terms.]

XIV.

Bridges and Roofs. This course comprises a study of the different systems of trussed bridges and roof trusses, and the calculation of the strains produced when loaded in any manner, the weight of the structure and the effect of wind included. Both graphical and analytical methods are used. Besides the various systems of trussed bridges, which are studied in detail, the plate girders, suspension bridges, cantilever bridges, draw bridges, and roofs of various designs are given equal attention; the purpose being to familiarize the student with the different forms and enable him to design and to estimate the cost of construction.
[Five hours a week for one term.]

XV.

Graphic Statics. This course teaches the determination of stresses in framed structures by the graphical method. Shearing forces, bending moments, centers of gravity and moments of inertia are graphically determined by the application of the principles of the force and equilibrium polygons; also the determination of stresses in bridge trusses with parallel chord and with broken chords, caused by uniform loads and locomotive wheel loads; graphical determination of stresses in roof trusses, graphical treatment of the arch symmetrical and unsymmetrical cases, graphical methods of arch ribs of hinged ends, and of fixed ends; stress diagrams; temperature stresses; braced arches; graphics applied to continuous girders. This course is supplemented by full explanations, notes, examples and problems.

[Five hours a week for one term.]

XVI.

Hydromechanics. This course is a thorough study of the theory of hydrostatics, hydraulics, and hydrodynamics, to which are added many practical exercises. The subjects studied are the transmission of pressures, center of pressures; velocity of flow from orifices of various shapes; fluid friction; Bernaulli's theorem with friction: Chezy's formula; Kutter's formula; flow over wires, and through tubes; flow in pipes; loss of head in friction and other losses; flow in conduits, canals, and rivers, velocities in cross sections; methods of gauging the flow, measurement of water power, dynamic pressure of flowing water; designing of waterworks and standpipes; hydraulic motors and relative merits; discussion of water wheels of different types, and a study of the conditions determining high efficiencies; classification of turbines, and a complete study and discussion of the different forms.

[For students in Civil Engineering, three hours a week for two terms.]

[For students in Electrical, Mechanical, Mining and Chemical Engineering, two hours a week for one term.]

DRAWING, ARTISTIC

In this department the aim is to lay a thorough foundation in drawing for those who wish to make Art a profession, but the courses are so arranged as to be accessible to other students. The system of teaching, which is that followed in the best art schools, is intended to develop the individuality of each student.

The work is done altogether from cast, objects and nature. The immediate surroundings of the University buildings, the lakes and the Saint Joseph River offer many beautiful subjects for the study of landscapes, and the classes are taken out in the summer for this study.

To the old collection of casts has been added a new one which was carefully selected at the National School of Fine Arts in Paris, where all the casts are moulded directly from the originals. The collection is as follows:

Full Figure. The Diadumenos (British Museum); the Doryphorus (Naples). These two figures are full size.

The following figures are reduced mathematically the Discobolus; the Venus of Milo; the Slave of Michael Angelo; the Achilles; the Fighting Gladiator (Louvre); and Houdon's Anatomical Figure.

Busts and Heads. Asiaticus (Paris); Brutus (Rome, the Capitol); Cato (Rome and Vatican); Cicero (Rome, the Capitol); Dante (Florence, Uffizi); Agrippa (Louvre); Venus (Vatican); Centurion (Naples); Ariadne (the Capitol); Psyche of Naples (Naples); Vestal (Vatican); Niobe (Vatican); the Two Daughters of Niobe (Florence.)

Among the old busts are the Apollo Belvidere, the Antinous, Bacchus, Juno, Mercury, Demosthenes, etc. Besides there is a complete set of decorative and architectural ornaments, taken from monuments of antiquity, the Middle Ages and the Renaissance, and of elements of the human figure (hands, feet, etc.) from the antique and some anatomical pieces.

COURSES

I.

(a) Form drawing in charcoal. Geometric figures and ornaments in outline. Charcoal drawing from still life. Pencil drawing from still life and nature.

[Five hours a week for one term.]

(b) Form drawing in charcoal. Ornamental figures in light and shade. Charcoal drawing from still life. Pencil drawing from still life and nature.

[Five hours a week for one term.]

II.

(a) Cast drawing in charcoal. Parts of the human figure in outline. Pencil drawing from still life and nature. Water color painting from still life and nature.

[Five hours a week for one term.]

(b) Cast drawing in charcoal. Masks and busts in light and shade. Pencil drawing from still life and nature. Water color painting from still life and nature.

[Five hours a week for one term.]

III.

(a) Antique drawing in charcoal. Full figure in outline. Pen and ink drawing from still life and nature. Water color painting from still life and nature.

[Five hours a week for one term.]

(b) Antique drawing in charcoal. Full figure, light and shade. Pen and ink drawing from still life and nature. Water color painting from still life and nature.

[Five hours a week for one term.]

IV.

(a) Antique drawing in charcoal. Groups in light and shade. Life drawing in charcoal. Bust and full figure. Pen and ink drawing from still life and nature. Water color painting from still life and nature.

[Five hours a week for one term.]

(b) Antique drawing in charcoal. Groups in light and shade. Life drawing in charcoal. Bust and full figure. Pen and ink drawing from still life and nature. Pen and ink drawing from life. Water color painting from still life and nature. Water color painting from life.

[Five hours a week for one term.]

Oil Painting. This course in oil painting includes still life, life, and nature studies.

Special course in outdoor work in the fall and spring, in pencil, pen and ink, water color painting and oil painting.

V.

Modeling. In the spring term of the Senior year, for students of Architecture, modeling in clay is taken up. The objects modeled are architectural forms, copied from casts or made from the student's drawings of his own work, as his progress and ability may warrant.

[Two hours a week for one term.]

Class of Decorative Design. The object of this course is to prepare students for professional work in decorative designing of all kinds. They will take up the study of historical ornaments and will be taught the several principles of the arrangement of designs, and from personal sketches of plants and flowers will be shown the art of making original designs for wall paper, book covers, stained glass, carpets, interior decorations, metal plates, etc. No particular program is given out as the teaching is purely individual.

DRAWING, MECHANICAL

Drawing A and B (Elementary Freehand, Lettering, Geometrical Drawing, Elementary Projections) are required to take up drawing I.

Two hours of actual time in drawing are required for each credit hour in the schedule.

I.

Projection Drawing. This course consists in sketching with pencil from various models of different machine parts and drawing to scale with the use of instruments. The course also embraces the principles of projections, methods of shop-drawing, lineshading, tracing, blueprinting and the preparation of working drawings of complete machines.

[Two hours a week for two terms.]

II.

Machine Drawing. A continuation of Course I. embracing advanced work in machine drawing and the elementary principles of mechanical design with calculation of dimensions and construction of drawings from sketch-book notes.

[Two hours a week for two terms.]

III.

Descriptive Geometry. A series of accurate plates is made, illustrating the principles of orthographic and spherical projections, shades and shadows, perspective and isometric projections.

[Two hours a week for two terms.]

IV.

Architectural Drawing. Exercises in instrumental drawing, pencil and brush work and lettering, followed by problems in orthographic projections, intersections, shades and shadows and perspective with particular reference to architectural subjects.

[Two hours a week for two terms.]

V.

Topography. Pen and colored topographical drawing, conventional signs, map drawing from notes taken from surveys. This course must be preceded by Course I.

VI.

Stereotomy. This course comprises a study of the application of the principles of Descriptive Geometry to the determination of the forms and sizes of the stones used in the construction of the different classes of arches and masonry structures. This course is given by lecture in the drawing room, explaining the construction of templates, and the use of directing instrument; also explanations of methods of drawing plans, elevation and development of oblique arches, wing walls and the like. A certain number of plates and drawings is required, illustrating the methods of performing practical work.

Drawing and designing plans, elevations and sections of masonry construction, foundations, dams, piers, abutments, culverts, and arches.

[Two hours a week for one term.]

VII.

Bridge Designing. This course proceeds from simple framed girders to complete bridge-trusses of various designs,—required of Juniors in Civil Engineering Complete design of a railroad bridge and detail drawings,—a short general course of bridge designing.

[Two hours a week for one term.]

VIII.

Freehand. The principles of freehand drawing in pencil and pen from objects, and later from biological specimens, plants, animals and microscopical preparations. For students of Biology.

[Two hours a week for two terms.]

IX.

Freehand. Advanced drawing from plants and anatomical dissections of animals. Illustrations for publications. For students of Biology.

[Two hours a week for two terms.]

X.

Water Color. Drawing in water color from still life and nature.

[One hour a week for one term.]

XI.

Rendering in Water Color. The rendering of architectural drawings, including perspectives,—casting of shadows, color treatments of buildings and handling of foreground and background.

[One hour a week for one term.]

XII.

Pen and Ink. Rendering drawings in pen and ink from studies by noted artists in this branch of art; followed by rendering of original drawings.

[One hour a week for one term.]

ELECTRICAL ENGINEERING

I.

Applied Electricity. A course of lectures and recitations, supplemented by laboratory practice, on the general theory of electricity and magnetism and its application to practical work, as follows: Setting up and testing primary and secondary batteries, systems of call bells, electric and gas lighting appliances, fire and burglar alarms, telegraph and telephone lines, switch boards and accessories. Experiments with induction coils, magnets, switches, voltmeters, ammeters, wheatstone bridges, galvanometers and other measuring instruments. The study of direct current generators and motors, arc and incandescent lighting systems, street railway machinery and appliances, electric heating and forging, electrolytic process, etc.

[Five hours a week for two terms.]

II.

Applied Electricity. Lectures and laboratory work on the construction and testing of switches, magnets, measuring instruments, induction coils, etc. The calculation of sizes of wire and location of circuits for lighting and power, the experimental study of alternating current machinery and accessories.

If the student has acquired sufficient skill in handling tools in his workshop, he may design and build a small dynamo, starting with rough castings, doing all the fitting and finishing, winding and adjusting, and finally testing for insulation, efficiency, and adaptability to special purposes. This course must be preceded by Course I. (*Course I. and II. are required in the Short Program Electrical Engineering; they are elective for general students and those studying telegraphy*).

[Five yours a week for two terms.]

III.

Applied Electricity, Laboratory and Lectures on the use of electricity in buildings, systems of wiring, materials used, the Underwriters requirements for the installation of bells and telephones, electric lighting. The principles of photometry and illumination. For students in Architecture.

[One hour a week for one term.]

IV.

Dynamo Electric Machines, D. C. This course, given in the first term of the Junior year, consists of a detailed study of the laws of magnetism, magnetism of iron, electromagnets, etc., as applied to dynamo electric machines followed by a study of the properties, characteristics and physical reactions of dynamos, the operation of dynamos as generators, the operation of dynamos as motors, power losses in generators and motors, efficiency, ratings and guarantees, supplemented by a collection of special notes and the solution of a large number of numerical problems.

Prerequisite: Freshman and Sophomore Physics and Mathematics. [Four hours a week for one term.]

V.

Direct Currents. This course is a continuation of Dynamo Electric Machines and comprises a thorough study of the practical operation of dynamos, station equipment, storage batteries, characteristic curves, electric distribution and wiring, armature windings, photometry and electric lighting, supplemented with notes and the solution of a large number of numerical problems and laboratory exercises.

Prerequisite: Dynamo Electric Machinery, Electrical Engineering IV.

[Three hours a week for one term.]

VI.

Alternating Currents. This course is designed to meet the needs of electrical engineering students and comprises a detailed and thorough study of the physical and mathematical relationship of quantities involved in alternating currents, properties of alternating currents, self-induction, capacity, the solution of alternating current circuits, alternators and transformers. The course is largely supplemented with special notes and lectures and the solution of a large number of numerical problems.

Prerequisites: Calculus and Electrical Engineering V.

[Five hours a week for one term.]

VII.

Alternating Current Machinery. This course, a continuation of VI, involves a detailed and thorough study of alternating current motors, synchronous motors, single phase commutator motors, converters, followed by a course in power transmission. Supplemented with special notes and lectures and the solution of problems. [Three hours a week for one term.]

VIII.

Problems of Electrical Engineering. A course intended for the solution of the more difficult problems met with in the preceding two courses, given under the direction of an instructor. This course accompanies VI. and VII. [Two hours a week for one term.]

IX.

Designing. The designing and making of working drawings of switches, resistance and other electrical apparatus. Calculation of sizes of wire and location of circuits for lighting buildings. Complete drawing of direct and alternating current dynamos. Laying out plants for power and lighting. [Two hours a week for two terms.]

X.

Electrical Laboratory. Practical work at wiring buildings for lights and power, testing circuits for insulation and grounds, construction and operation of storage batteries, management and care of dynamos, characteristic curves of particular machines under different conditions, efficiency, tests of motors by absorption dynamometer methods, alternating current dynamo and transformer tests, the testing of storage batteries, and complete efficiency tests. Careful notes are taken. [Four hours a week for two terms.]

XI.

Hydraulic Engineering. This course is designed to equip the students of engineering with the fundamental principles of hydraulics with a view towards their application to the design of hydro-electric power plants. The course consists of lectures, recitations and notes on hydro-statics, hydrodynamics, methods of measurement of flow, recognizance of water power, measurement of power, and materials of engineering.

This course is for the Senior students of Electrical Engineering. Prerequisites: Mechanics and Physics.

[Three hours a week for one term.]

XII.

Hydro-electric Power Plants. This course is designed to acquaint the student with the construction of hydro-electric power plants involving hydraulic construction in general, power house construction, power house equipment, i. e., water wheels, generators, etc., and power tansmission. This course must be preceded by Hydraulic Engineering.

[Three hours a week for one term.]

XIII.

Electric Railways. Lectures and recitations on track and overhead construction, cars, trucks, motors and systems of control for both direct and alternating currents, sub-stations, operation and financial considerations. [One hour a week for one term.]

XIV.

Telephony. Laboratory and lectures on general principles, intercommunicating systems, switchboard systems, manual and automatic operation, cost of equipment, maintenance and depreciation.

XV.

Wireless Telegraphy and Telephony. Experimental practice and lectures on the theories involved in the construction and operation of the leading systems, oscillators and sending apparatus, detectors and receiving devices, tuning to prevent interference.

[Two hours a week for one term.]

XVI.

Illuminating Engineering. Lectures on the theory and operation of the various kinds of electric and other lamps, distribution of light and the location of lamps to produce the best illumination, practical problems and the study of particular installations, the cost per candle power or per candle foot including first cost, attendance, breakage and depreciation.

[Two hours a week for ten weeks.]

XVII.

Theory of Alternating Current Machinery. This is an advanced course on the theory of alternating current machinery, use being made of the complex quantity and vectors in the solution of problems. The course is supplemented by a course in Vector Analysis. Textbook, special notes and lectures.

XVIII.

Electrical Engineering Club. The Electrical Engineering Club is an organization composed of all the electrical engineering students of the University. Assigned papers on electrical engineering topics are presented and discussed. The meetings are under the direction of an instructor. Its purpose, in addition to imparting much useful information, is to give students fluency in speech and writing. Junior and Senior students are supposed to take an active part in the proceedings of the club. Engineers of prominence, not connected with the department, give frequent lectures on highly important electrical engineering subjects. The lectures and proceedings are published in the bulletin of the department. The club meets weekly. During 1915 and 1916, Mr. Lucius B. Andrus, Chief Engineer and Superintendent of the Indiana and Michigan Electric Co., gave a regular series of lectures to the Club. Mr. Frederick A. Bryan, President and General Manager of the Indiana and Michigan Electric Co., Mr. M. S. Caldwell and Mr. C. S. Clifford of the same company, gave occasional lectures.

XIX.

Inspection Trips. Study of the larger power, lighting and telephone installations, also factory methods in several typical industrial establishments, trips to the hydraulic and steam generating plants along the St. Joseph river.

SUMMER THESIS

Students of the Electric Engineering Department are supposed to write a thesis, or essay, of not less than one thousand words on some topic assigned to them in their Junior year. This essay will consist of a report on some electrical installations, or actual work performed by the student during the summer vacaton.

GRADUATION

At the beginning of the Senior year the student selects a thesis for investigation and makes the first report on the same to the Director of the Department no later than the beginning of the second semester of the Senior year. By this time the student is supposed to have a clear outline of what he is going to do and to have gathered all the necessary data for the successful working out of his thesis. Reports on the progress of the thesis are made then (at regular intervals) to the Director of the Department for approval and suggestion. Two typewritten copies of the thesis must be filed with the Director of the Department no later than May 20

ELOCUTION AND ORATORY

I.

Readings and Declamations. This course is designed to correct defects in pronunciation and emphasis. Each student is required to give two declamations.

[One hour a week for one term.]

II.

Readings and Declamations. Continuation of Course I. Each student is required to give three declamations.

[One hour a week for one term.]

III.

Practical Elocution. Exercises in breathing, voice culture and action. The principles of pronunciation and emphasis and their application in the reading of selections. [One hour a week for one term.]

IV.

Practical Elocution. Further exercises in breathing, voice culture, action. Quality, force, pitch and time. Minute speeches and declamations. Lectures on the principles of action.

[One hour a week for one term.]

V.

Oral Discussions. The application of formal logic to debating. Analysis of selected argumentative speeches, and the preparation of briefs. Courses III. and IV. and a course in logic are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for one term.]

VI.

Oratory. A study of the great orators of ancient and modern times. Each student is required to write and deliver a biographical oration on one of the great orators. Lectures on methods of public address. Courses III. and IV. above, and Course I. in English are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for two terms.]

VII.

Shakespearean Reading. The critical and artistic reading of two of Shakspeare's plays accompanied with stage action. The students present the play by scenes before the class. Courses III. and IV. are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for two terms.]

VIII.

Assembly Work. This course is designed to supplement the other courses in this department. It consists of debates, short orations, minute speeches, declamations, impromptu and drill work in parliamentary law.

[One hour a week for two terms.]

ENGLISH

I.

Genung's Principles of Rhetoric. A study of the complete text. Frequent practice in simple theme work, versification. Writing in all literary forms and assigned readings.* [Four hours a week for two terms.]

II.

(a) **Essay and Oration.** Intensive study.

[Three hours a week for one term.]

(b) **Poetry and the Poets.** Texts, theory and critical study.

[Three hours a week for one term.]

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* Every Freshman will be obliged to follow a class in *correct English*, one hour a week, unless his written work gives evidence that he may be dispensed from this special exercise. Any student notably deficient in correct English will be obliged to take this course.

Practice in writing in all literary forms and assigned readings.

III.

Fiction. (a) The Short Story, technically, historically and critically considered.

[Three hours a week for one term.]

(b) The Novel, technically, historically and critically considered.

[Three hours a week for one term.]

Practice in writing in all literary forms and assigned readings.

IV.

The Drama. (a) Historical Survey of the Drama. Greek and Roman Dramatists. Liturgical, Morality and Miracle Plays. Technique of the Drama.

[Three hours a week for fourteen weeks.]

(b) Elizabethan Dramatists. Intensive study of Shakespeare.

[Three hours a week for sixteen weeks.]

(c) Modern Drama, from Sheridan to the present time. [Three hours a week for six weeks.]

Under all the subjects specified attention will be given to current productions with a view of properly acquainting the student with the writers of the day.

V.

Business English. This course is designed to meet the needs of students following the program of Commerce. Accuracy and speed in the various business forms will be demanded for credit in this subject.

[Two hours a week for two terms.]

Graduate Work in English. Students wishing to do advanced work in English will be provided with library facilities and led through the usual work for the degree of Master of Arts or Doctor of Philosophy.

The major subject on approval of the Faculty of English may be any special aspect of a literary form or epoch, or a comparative study of related authors Seminar work, the study of texts, and special lectures by professors make up the course.

GEOLOGY

I.

Principles of Geology. Lectures, recitations, demonstrations. The study of the general features of the earth; the material composing the accessible parts of the earth; the arrangements of the material in rocks; the causes of geological changes; the history of the earth and the various forms of life that existed in the different periods of successive geological ages.

[Four hours a week for one term.]

II.

Mineralogy. Lectures, recitations, and laboratory work. A study of the principles of crystallography and the classification of minerals, accompanied by practice in the laboratory and museum in the determination of minerals, especially the ores. Blow-pipe analysis.

[Two hours a week for one term.]

III.

Mineralogy. The object of this course is to train the student to identify minerals by their physical characteristics, such as crystal form, cleavage, color, hardness and specific gravity without having to resort to blowpipe or chemical tests except in the rare minerals. Recitations are made upon drawers of minerals in which the student points out the distinguishing features by which he recognizes the different minerals.

[Three hours a week for two terms.]

IV.

Crystallography. In this course there is made a complete study of the laws in the different systems of crystal formation, by means of laboratory work in models, natural crystals and cleavage specimens.

[Five hours a week for one term.]

V.

Petrography. This course is a study of rocks with regard to their classification, structure, mineralogical constituents, chemical composition and alterations; a study of the physical characters of the minerals shown in thin transparent rock sections with the aid of the microscope; a practical study of rocks in the hand specimens and also in summer field work.

[Two hours a week for two terms.]

VI.

Geology, Physical and Chemical. A course treating of the origin and alterations of rocks, of general eruptive and earthquake action, metamorphism, faulting, jointing, and mountain building: the action of atmospheric agencies, surface and underground water. All of which subjects are especially considered in their application to mining pursuits.

[Three hours a week for one term.]

VII.

Geology, Economic Mining. A study of the genesis of the useful ore deposits, both metallic and non-metallic; an analysis of the relation existing between structural, dynamic and chemical geology, petrography and the ore deposits encountered in mining operations. Frequent reference is made to the bulletins, monographs and reports of the United States Geological Survey.

[Two hours a week for one term.]

GERMAN

I.

Grammar. Translation from German into English of simple prose; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

[Five hours a week for two terms.]

II.

Grammar. Translation into German of narrative prose and selections from history. Sight reading of selections from history.

[Five hours a week for two terms.]

III.

Sight reading of plays, poems and prose writing. Translation of selections from history and literature; original essays.

[Four hours a week for two terms.]

GREEK

I.

Homer. Iliad. Text Edition.
Lysias. Select Orations.
St. John Chrysostom. Eutropius. (*Elective*).
Prose Composition.

[Five hours a week for two terms.]

II.

Homer. Odyssey. Text Edition. (*Elective.*)
Herodotus. Selections.
St. Basil. De Profanis Scriptoribus.
St. Gregory. Machabees. (*Elective.*)
Advanced Prose Composition.

[Five hours a week for two terms]

III.

Demosthenes. The Speech on the Crown, or the Olynthiacs and the Philippics.

Thucydides. One book, *selected.* (*Elective.*)
Aeschylus. One play, *selected.* (*Elective.*)
Sophocles. Oedipus Tyrannus.

[Three hours a week for two terms.]

IV.

Greek Literature.
Euripides. One play, *selected.*
Aristophanes. One play, *selected.*
Pindar. Selected Odes. (*Elective.*)
Plato. The Apology and Crito.

Thesis. Subject assigned or selected with approval of the dean. About 2500 words in length.

[Three hours a week for two terms.]

Greek Fathers: St. Basil: The Martyr Gordius.—St. John Chrysostom: The Return of Bishop Flavian.—St. Gregory Nazianzen: Funeral Oration of Caesarius. (*Electives.*)

Graduate Work in Greek. Advanced courses of instruction in the Greek language and literature will be provided for graduate students who look forward to the Master's or Doctor's degree. The center of work will be the Greek seminar, devoted to the interpretation of passages selected for that purpose by the director of the seminar, and to a critical study of one particular author or group of authors in the same department of Greek literature; as for instance, Homer, Plato, the orators, the historians, the dramatists, etc.

The work of the seminar will be supplemented by lectures on the history of comparative philology, on comparative grammar, and on the Greek dialects.

For those who desire a broader basis for their linguistic studies, an elementary course in Sanskrit will be offered.

HISTORY

ANCIENT HISTORY

I.

(a) **Ancient Greece** to the conquest by Rome of the Hellenic world. Readings and examinations on required texts. Special attention is given to the following topics: geographical features; the religion of the people; the growth of city and state; Sparta and the Peloponnesian League; Athens,—the forces that led from monarchy to Democracy; the time of Pericles; Macedon; the Empire of Alexander; literature and art; the Hellenistic Period. A study is made of the political and social forces that led to the supremacy of Roman ideas, thus making course Ia a preparation for the history of Ancient Rome in Course Ib.

[Four hours a week for one term.]

(b) **Ancient Rome** to the Barbarian Invasions. Readings and examinations on required texts. The treatment of this course is similar to that followed in Ia. Particular emphasis is placed on the social and political life of the Roman people, though due attention is given to the various military activities. The course involves a careful study of the Roman kings, the early Republic, the spread of Roman power, the Punic Wars, the changes that led to monarchy, the decline of the empire, the barbarian invasions, the beginnings of Christianity.

Class discussions and weekly reports form an important part of the work in courses Ia and Ib.

[Four hours a week for one term.]

MEDIEVAL AND MODERN HISTORY.

II.

(a) **The History of Western Europe from the Beginning of the Christian Era to 1648.** The conflict of

Paganism and Christianity; the development of the Church's political power; the invasion of the Barbarians; Feudalism; the guild as a factor in town life; monasticism and the rise of the universities. A detailed study is made of the Renaissance, the Protestant Reformation, and the Catholic activities in the latter half of the sixteenth century, especially the work of the Council of Trent.

[Four hours a week for one term.]

(b) **The General History of Europe from the Close of the Thirty Years' War to the Present Time.** Attention is given to the rise and development of Modern European countries; the economic growth of Europe; the French Revolution and the Napoleonic Era; the Franco-Prussian war; causes and probable effects of the great European war; religious thought in present day Europe. The work closes with a comparative study of European governments.

[Four hours a week for one term.]

III.

(a) **The History of the British Isles from the Roman Invasion to the Present Time.** Britain before the introduction of Christianity; monastic life; England during the Crusades; the meaning of the Magna Charta; the jury system; the growth of parliament; commercial and military relations with the continent; town life; the Church of England; the Napoleonic wars; the industrial revolution; the growth of political parties. Regular reports by students on special topics are required.

[Three hours a week for two terms.]

IV.

(a) **American History from its Beginning to the Present Time.** A large part of the work in this course consists in the preparation of special topics by the students. No text book is used. An effort is made to train the student in the use of original sources, as well as in the discriminating use of secondary authorities. Weekly tests are given on the lectures and assigned readings. The following topics receive special attention: America before the time of Columbus; early discoveries and explorations; conflicting European claims; colonial institutions; the Church in the colonies; growth of industries; colonial wars; the revolutioary period; the conflict over slavery; reconstruction; rise of political parties; the place of America in world politics.

[Three hours a week for two terms.]

(b) **American Church History from Its Beginning to the Present Time.** No text book is used. Weekly reports on assigned readings are required. Special attention is given to the work of the early missionaries; an examination of the various religious denominations in colonial times; religious tolerance before the Revolution; the colony of Maryland; Catholic leaders; the Know-Nothing Movement; Trusteeism; later anti-Catholic organizations; Catholic journalism; the Catholic educational system.

[One hour a week for two terms.]

IRISH HISTORY

V.

(a) **Irish History from the Earliest Colonists to the Present Time.** The purpose of the course is to acquaint the student with the true story of Ireland by presenting a statement of facts. Early Irish religious beliefs, customs, racial characteristics, systems of government are discussed, and specific topics are assigned for research.

(b) A course of lectures on the modern Celtic movement with a study of the modern Irish writers.

[Four hours a week for one term.]

POLISH HISTORY

VI.

History of the primitive Slavs. The rise of the Polish Nation. The Epoch of the Piast-Dynasty (962–1386).

The Jagiellonian Epoch (1386–1572).

Poland during the rule of the Elector Kings (1572–1795).

Poland in its Partitions. From 1795 to the present time. Polish Emigration.

No particular text-book is used in this course. It is a lecture-course; and the student is required to consult the principal authors to supplement the notes gathered from the lectures in class.

GENERAL HISTORY

VII.

A General Course in Medieval and Modern History with special reference to the most important periods. This course is especially designed for students in the colleges of Law, Science, and Engineering.

[Four hours a week for one term.]

LATIN AMERICAN HISTORY.

VIII.

This course consists of lectures, readings, and the preparation of reports by the students. A two-year's course in Spanish is a prerequisite, since the student must be able to read sources in Spanish and Portuguese. The course considers the discovery and exploration of Latin America; the Spanish and Portuguese colonial policy with reference to religion, education and general culture, local government, industry and commerce; the influence of the French Revolution on the movement for independence; the rise of the independent states; the social and economic problems of the present republics.

This course is required for students of Foreign Trade, and is interchangeable with History IV and Economics XVII for the students of Letters, Economics, Business Administration and Journalism.

[Four hours a week for two terms.]

JOURNALISM

I.

A brief survey of the field; metropolitan and small city dailies, country weeklies, class and trade papers; magazines; also a general study of the nature, gathering, reporting and writing of news; interviews; dramatic and other criticism; editorial writing, head writing and make up; organization of a newspaper staff.

[Four hours a week for two terms.]

II.

A detailed study of news and its handling, news values, classes of news, newspaper style, forms of news stories, interviews, criticism, feature and special articles, with copious practice in actual assignments and in correspondence; verification of principles by study of fifty daily newspapers.

[Four hours a week for two terms.]

III.

Newspaper fields and newspaper properties; equipment; source of income; developing subscription and advertising patronage; advertising rates; self advertising; co-operation of editorial department; sources of expense; newspaper accounting.

Psychology of advertising; advertising mediums; relation of advertising to distribution and price; its social influence; good and bad copy; trade marks; elements in the advertising problem—the consumer, the commodity, the medium, competition, timeliness;

publisher's responsibility for advertising, the ethical and the business view point.

[Four hours a week for two terms.]

IV.

Ethics of Journalism. Newspaper Policy; Comparative Journalism; Editorial Writing; Magazine Writing; Editing Copy; Rapid Writing; A Test Period of Reporting on a Daily Newspaper. Special treatment of the laws affecting publications, and of Constitutional and International Law will be given under Business Law IX.

[Four hours a week for two terms.]

LATIN

I.

Livy. Selections.
Vergil. Bucolics and Georgics.
Cicero. De Senectute and De Amicitia.
Prose Composition. *Scheier.*

[Five hours a week for two terms.]

II.

Cicero. De Oratore.
Horace. Odes and Satires.
Advanced Prose Composition. *Scheier.*

[Five hours a week for two terms.]

III.

Livy. Book I.
Horace. The Literary Epistles and the Ars Poetica
Tacitus. Agricola and Germania.
Terence. One Play, *selected.*
Original Themes. (Two a month).
Seminar. Papers on the Authors and their Works (Once a month).

[Three hours a week for two terms.]

IV.

Quintilian. De Institutione Oratoria, Books X. and XII.
Plautus. Captivi.
Cicero. De Officiis.

A Thesis. Subject assigned or selected with approval of the dean. About 2500 words in length.

[Three hours a week for two terms.]

Graduate Work in Latin. Advanced courses of instruction in the Latin language and literature will be provided for graduate students who are candidates for the degree of Master or Doctor. The work will be directed in the seminar and be devoted to a critical study of one particular author or group of authors.

The work of the seminar will be supplemented by lectures on comparative philology and comparative grammar.

MATHEMATICS

I.

Algebra. This course includes a study of the binomial theorem, the theory of logarithms, choice, chance, variables and limits, series, determinants. Then follows a thorough study of the general properties and solution of equations, embracing the subjects of derivatives, transformation, detached coefficients, surd and imaginary roots, incommensurable roots, limits of roots, biquadratic equations, Descartes' and Cardan's rules; Sturm's theorem, Horner's method.

[Five hours a week for one term.]

II.

Analytic Geometry. This course includes a study of the point and right line; conic sections; their equations and properties; discussion of the general equation of the second degree containing two variables; different systems of co-ordinates; transformation of co-ordinates; an elementary course in geometry of three dimensions, embracing the point, straight line, plane and surfaces of revolution; transformation of co-ordinates; quadric surfaces and supplementary propositions.

[Five hours a week for one term.]

III.

Calculus, Differential. This course includes a study of the methods for the differentiation of algebraic, logarithmic and exponential, trigonometric, and inverse trigonometric functions, successive differentiation, and differential coefficients; treatment of implicit and compound functions; expansion of functions; indeterminate forms; partial differential coefficients of the first order and of higher orders; direction of curvature; radius of curvature; envelopes; maxima and minima of functions of one independent variable, and of several independent variables; tracing curves; differentials of arcs, plane areas, surfaces and volumes of revolution.

[Five hours a week for one term.]

IV.

Calculus, Integral. Integration of elementary form and of rational fractions; integration by rationalization and by parts; successive integration; multiple integrals; definite integrals, limits of integration; double integration applied to plane areas; rectification of plane curves; quadratures of plane areas and surfaces of revolution; surface and volume of any solid; intrinsic equation of curve. This course is supplemented by numerous exercises and examples.

[Four hours a week for one term.]

V

Differential Equations. An elementary course for Engineering students, supplementary to the course of integral calculus. It embraces equations of the first order and degree; equations of the first order, but not of the first degree; singular solutions; linear equations with constant coefficients; special forms of equations with higher orders. Numerous applications to mechanics and physics are introduced during the course.

[One hour a week for one term.]

Advanced Work. The prescribed courses in pure mathematics are I to V. inclusive. Advanced courses, based on standard authors, are offered in: Higher Algebra, Trigonometry, Determinates, Theory of Equations, Calculus, Analytic Geometry, Analytic Geometry of three Dimensions, Quaternions. The text-books are not necessarily the same every year. The number of students required to constitute a class in any one subject must be at least five.

MECHANICAL ENGINEERING

I.

Thermodynamics. A comprehensive detailed study of the theory of the steam engine, steam turbine, gas engine and other heat motors involving the laws of thermodynamics of gases, saturated vapors and superheated steam. After the ideal standards are established their modifications in practice are dwelt upon in applying the principles to prime movers, the boiler, condenser, pumps and refrigerating machinery. The work includes a general study of the different types of internal combustion engines as well as an economic study of the operation of power plants. Frequent reference is made to trade catalogues on file in the department library. Must be preceded by Course VI.

[Four hours a week for two terms.]

II.

Materials of Engineering. This course, supplemented by shop work and laboratory work in testing material of construction, is designed for the purpose of acquainting the student with the properties of the material he will use in his profession. Tensile and shearing strength, elasticity and resistance are studied, together with the effects of strain, intermittent loading and impact. The process of manufacture of the most important materials is taken up, and estimates of the cost of construction at market prices complete the work.

[Two hours a week for one term.]

III.

Steam Power Plants. The preliminary work of this course comprehends a brief study of the history of the steam engine together with its development and differentiation into the standard types at present on the market. Subsequently, the elements controlling designs for specific purposes are considered. Finally the study of the Power Plant as a whole is taken up and the relations between engines, turbines, pumps, condenser, boilers, piping, fuel and auxiliaries are dwelt upon in detail. A completely worked out plan for a specific equipment is required of each student.

[Five hours a week for two terms.]

IV.

Steam Boilers. This subject is teated much as that of Course III. The determination of sizes of parts from consideration of strains, thickness of shells, size of rivets, braces, furnaces and proper methods of connection of boilers, with efficiency of furnaces and life of boiler are some of the subjects considered. The method of determining the efficiency of fuels, heating surfaces, heights of chimneys, boiler setting and materials used in connection are also discussed.

[Three hours a week for one term.]

V.

Kinematics. This course treats of the geometry of machinery, the determination of the paths of the various parts of an elementary combination and the constraining of the parts to move in these paths. The general theory is then applied to cams and gear teeth, the relative motion of machine parts and the kinematic trains, belts, pulleys, speed cones, link work and other aggregate combinations.

[Two hours' recitation and two hours' drawing
a week for one term.]

VI.

(a) **Machine Design.** This work involves a study of the form and strength of machine parts as applied in designing, with computation of dimensions for fastenings, bearings, rotating pieces, belt and tooth gearing, etc. The derivation of rational formulae and the determination of empirical formulae are included and applied in designing.

[Two hours a week for one term.]

(b) **Elements of Steam Engineering.** A general survey of the application of heat to the development of power in prime movers, including sources of heat, methods of rendering it available and its utilization in boilers, pumps, engines, turbines, condensers and heating systems. Drawing board work on valve gears, tangential force diagrams, governors, flywheels and general mechanics of the steam engine is included.

[Five hours a week for one term.]

VII.

Gas Power Plants. A study from text-book, reference works, current technical magazines and catalogues of manufacturers of the adaptation of the various types of prime movers available as power sources. From a set of specifications for a given power plant submitted to the student, a detailed plan is required, showing the selection and arrangement of the power units, method of piping, arrangement of fuel handling apparatus and other auxiliaries.

Must be preceded by Course X. and taken in conjunction with Course XI.

[Three hours a week for one term.]

VIII.

Mechanical Laboratory. The work taken up includes a study of the methods of testing the steam engine under varying running conditions, valve setting, calibration of thermometers, gauges and indicator springs, use of Pony brake, Weber and Emerson dynamometers, Pelton water wheel, Weir calibration, etc.

[Five consecutive hours a week for one term.]

IX.

Steam Engines and Boilers. A brief course in the study of boilers and steam engines designed to familiarize the student with the different types in use and their respective merits. Only that theory is taken up which is necessary to the working out of problems, the ultimate object of the course.

Students taking this course must provide themselves with an abundant supply of trade catalogues.

[Three hours a week for one term.]

X.

Gas and Vapor Engines. This course, extending over two terms, is given to a general descriptive study of all the types of gas engines and explosive motors. The general construction of gas, oil, vapor engines is studied together with their adaptations to various uses.

Results due to change in ignition, compression and variation of working fluid; methods of speed regulation and government and the details of auxiliaries as pumps, carburetors, hot tubes, batteries, spark coils and dynamos are dwelt upon.

[Five hours a week for two terms.]

XI.

Gas Engine Design. A complete study of the thermodynamics and design of the gas engine, by text-book, lectures and drawing broad. The major subjects taken up are power, efficiency, economy, forces due to gas pressure and inertia and dimensions of engine parts.

[Five hours of recitation and ten hours of drawing
a week for two terms.]

XII.

Gas Engine Construction. The complete working up from rough castings and forgings of a small type of gas engine. This is part of the thesis work for students in the Short Program and requires the complete machining and assembling of the engine and must be preceded by Courses X. and XI.

[Three hours a week for two terms.]

XIII.

Gas Engine Laboratory. Indicator practice, commercial efficiency, governing economy, speed regulation. Experiments in ignition, spark coil construction, carburetors and vaporizers. Test of engine constructed by the student.

[Two afternoons each week for two terms.]

XIV.

(a) **Woodwork.** Exercises in planing, splicing, framing, scroll sawing and turning.

(b) **Application of Carpentry** to pattern making cores, etc., including parts of machines, pipe joints, cranks and bearings.

(c) **Foundry Practice.** Setting up and drawing simple and complicated patterns. Lectures on heating and pouring metals for different purposes. Core making.

(d) **Iron Forging,** welding, annealing, shaping, tool making, tempering, and case hardening.

(e) **Benchwork in** iron, including surface chipping, key setting, draw filing, scraping and polishing.

(f) **Accurate Work** on the lathe, planer, shafting and milling machines. Construction of machine tools, reamers, taps, twist drills, gear wheels and complete machines.

[Each section except (a) and (b) two hours a week for one term.]

Thesis. Each candidate for a degree in Mechanical Engineering must present for graduation a thesis of considerable magnitude which will exhibit his knowledge of the courses he has followed. It may embrace designing, experimental investigation or original research, in a subject selected by the student and approved by the professor. The major part of the second term, Senior year, is devoted to this work, and graduation is conditional upon the knowledge of mechanical engineering displayed in its preparation.

MEDICINE

Human Anatomy I. Lectures, recitations and laboratory. Osteology; arthrology; myology; angiology; phlebology; neurology; the respiratory and alimentary systems.

[Four hours a week for two terms.]

The laboratory work consists in a complete dissection of the upper and lower extremities under the guidance of the instructor in charge of the course.

Each student makes a complete dissection of one lateral half of the human body.

[Two laboratory hours a week for two terms.]

Human Anatomy II. Lectures, recitations and laboratory. Lectures and demonstrations on the organs of respiration, circulation, and digestion; the genito-urinary organs; sense-organs; the central and sympathetic nervous systems. The following dissections are made: head, neck, trunk; thoracic and abdominal organs; perineum; genitalia; peripheral nervous system; the human brain and the nervous system.

[Three hours recitation and two laboratory
hours a week for two terms.]

Bacteriology II. Lectures, recitations and laboratory. Cultural morphological, and biological character. istics of non-pathogenic and pathogenic bacteria- Special stress is laid upon infection, immunity and the specific infectious diseases. The students are required to make up bacteriologic media; to study some of the more important groups of non-pathogenic and pathogenic bacteria; to keep daily records of the biologic changes in cultures under observation; to conduct post-mortems on infected animals; and also isolate and identify species of bacteria in mixtures. Bacterial investigations are made of water, air, milk, etc., as well as of pus and exudates of infected material.

[Three hours recitation and three laboratory
hours a week for one term.]

Embryology I. Lectures, recitations and laboratory work. This course is outlined to give the student a thorough understanding of the development of all the tissues in the body.

[Three hours recitation and three laboratory
hours a week for one term.]

Histology I. Lectures, recitations and laboratory. This course is intended to give the student a familiarity with the normal appearances of the tissues of the body. The lectures are to correlate with the laboratory work.

The tissues will be studied fresh, in freehand or frozen sections, and the students are taught to use stains for the purpose of analyzing and studying the characteristics of particular cells and the differences between them.

[Three hours recitation and three laboratory hours a week for one term.]

Pathology I. This is a lecture and a recitation course of the microscopical and macroscopical changes that take place in tissues due to disease. Demonstrations of diseased tissues in the class room.

[Three hours a week for one term.]

Pathology II. This is a continuation of Pathology I, supplemented by a microscopical study dealing with the fundamental changes present in diseased tissues. It is required that each student witness a number of autopsies and make a detailed record of at least two of them.

[Three hours recitation and two laboratory hours a week for one term.]

Pharmacology and Therapeutics I. Lectures, recitations and laboratory. The action and uses of medicines; the symptoms and treatment of poisoning. The physiological action of a selected list of drugs is observed in laboratory experimentation on mammals and amphibia.

[Five hours recitation and one laboratory hour a week for two terms.]

Physiology II. Lectures and recitations and class room experiments. The blood; lymph; muscles; nerves, are treated. Didactic lectures given the students during the entire semester.

The laboratory work is given during the senior year.

[Five hours recitation a week for one term.]

Physiology III. Lectures and recitations. The following subjects are treated: Circulation, respiration; secretion; digestion; nutrition; the special senses; nervous system.

[Four hours a week for two terms.]

Physiology IV. Laboratory experiments are performed on selected topics illustraing the fundamental principles as well as the recent advances in physiology.

Each student is required to perform at least two blood pressure experiments with the roll kymograph.

[Two laboratory hours a week for two terms.]

Physiological Chemistry XVI. Lectures, recitations and laboratory. This course includes the study of the chemical properties of fats, carbohydrates and proteids; digestive secretions and their actions; quantitative and qualitative examination of milk, gastric juice, bile, saliva, etc.

[Three hours receitation and three laboratory hours a week for one term.]

Pharmacy XIV. A complete study of the English and metric systems; the preparation of galenicals; their incompatibilities; the principles of prescription writing.

[One hour recitation and one laboratory hour a week for one term.]

Physical Diagnosis I. This course is designed to acquaint the student with the technique of physical examination. He is trained to recognize first normal sounds and signs of the thorax and abdomen, and subsequently the student takes up pathological conditions.

[Two hours a week for one term.]

Toxicology I. Lectures, recitation and laboratory. This course includes the study of the effects of inorganic and organic poisons as observed on the animal organism; the post mortem appearances due to poisoning; the composition and physiological properties of the alkaloids. In the laboratory the student is not only to experiment on animals to observe the effects of poisoning, but also acquaint himself with the methods used in detecting the more important poisons.

[One hour recitation and one laboratory
hour a week for one term]

Thesis. Before the degree of B. S. in Medicine is conferred the candidate must present, after having satisfactorily completed the courses prescribed, a thesis of some merit. The subject of the thesis is given to all students at the beginning of their senior year. Each senior is to make a report on the progress of his thesis to the director of the department once a month during the first semester. During the second semester, however, his reports are to be made weekly, for which he is allowed two hours consultation every week with the professor Two typewritten copies of the thesis must be filed with the director of the department, not later than the 20th of May.

METALLURGY.

I.

Metallurgy. Among the subjects studied in this course are the following—classification of ores, sampling, crushing, milling practice, roasting, smelting and cyanidation, the various extraction processes of the following metals—gold, silver, copper, lead and zinc, are given special attention; the production of pig iron in blast furnaces.

A trip of inspection is made to smelting plants, blast furnaces and mills (stamps and rolls) in order to familiarize the student with metallurgic plants in operation. [Three hours a week for one term.]

II.

Assaying. Chiefly laboratory work. Furnace assaying of the ores of gold, silver and lead.

[Two laboratory hours a week for one term.]

III.

Assaying. This course consists of a series of actual determinations of the quantity and value of gold, silver and lead in the various ores by the crucible and scorification methods of the fire assay; the assaying of gold and silver bullion; determining the strength of cyanide working solutions; the assay of gold bearing cyanide solutions; and wet determinations of iron, copper and zinc.

[Eight hours a week for one term.]

IV.

Ore Dressing. A course in which a detailed study is pursued of the various processes of mechanically separating and saving valuable minerals from the valueless gangue of ores, whereby the valuable minerals are concentrated into smaller bulk and weight by discarding a large portion of the waste.

The principal subjects treated are: Preliminary and final crushing by means of rock-breakers, steam and gravity stamps with amalgamation; rolls, Chilian, Huntington; tube and ball mills; screen sizing and classifying; sand and slime concentrating on jigs, tables and vanners; magnetic separation, pneumatic concentration, oil flotation processes; locating and constructing the mill. The course includes a trip of inspection to a number of the most modern concentrating mills in the Ontario district where the student engages in practical work in the study of mill construction, operation and efficiency.

[Three hours a week for one term.]

MINING ENGINEERING

I.

Principles of Mining Engineering. This course includes a general study of Mining operations divided into the following subjects: Occurrence of minerals in the earth's crust, discovery, boring, excavation, supporting excavations, exploitation, haulage, hoisting, drainage, ventilation, lighting, access, ore dressing and treatment. [Five hours a week for two terms.]

II.

Mine Surveying. A study of the subject of surveying in its special application to mines, through lectures, plotting of problems and recitations; for students who take the summer course in the mines. The following subjects receive particular attention—recording of notes in underground traverses and their subsequent plotting, a comparison of metal mine and coal mine surveys, the methods of connecting surface with underground surveys by means of both the auxiliary telescope and plumb lines and the deputy mineral surveyor's methods of surveying mining claims for patent. Each student is required to make a complete mine map from notes of actual mine surveys.

[Three hours a week for one term.]

MICROSCOPY

I.

Microscopy. Lectures and laboratory work. Refraction and dispersion of light and illumination. The index of refraction in different media. Different shapes of lenses. Spherical and chromatic aberration. The selection and care of a good microscope. The use of accessories for advanced work; immersion and adjustable objectives, camera lucida, sub-stage condenser, polarizer, micrometers, etc. Special work in photomicrography. This course is given in connection with Bacteriology.

II.

Micro-Chemistry Laboratory work. The preparation of micro-chemical reagents and their application in testing, fixing, hardening, staining, cleaning and mounting tissues and organs.

[One laboratory hour a week for one term.]

MUSIC

FIRST YEAR

I.

Violin. Studies by Wichtl, Ries, Mazas, Kreutzer Fiorillo. Compositions by Dancla, DeBeriot, Sitt.

II.

Pianoforte. Koehler's and Damm's *Piano School.* Studies by Loeschorn, Berens, Czerny, Heller, Sonatinas and easy sonatas by Clementi, Haydn, Reinecke and Mozart. *Jugend Album* and *Kinderscenen* by Schumann.

III.

Voice Production. Tone placing. Diaphragmatic breathing-control. Articulation. Text-book, Shakespeare's *Art of Singing, Part I.;* Kofler's *Art of Breathing; Studies by Bassini*, English songs.

Vocal Sight Reading. Elementary theory of Music. Intervals and ear-training. Choir practice.

IV.

Organ. Rink Organ School. Eugene Thayer Studies, *Light Preludes and Fugues* by Bach.

SECOND YEAR

Ia.

Violin. Studies by Rode, Schradieck, Dont. Sonatas and pieces by Tartini, Bach, Beethoven, Mozart.

IIa.

Pianoforte. Studies by Czerny, Heller, Hasert, Lecouppy, Cramer, Krause. Octave studies by Turner. Bach's preludes, fugues and inventions. Sonatas and pieces by Mozart, Haydn, Beethoven, Mendelsohn, Schumann, Schubert.

IIIa.

Voice Production. Advanced breathing exercises. Study of the chest and falsetto registers. Stroke of the glottis. Text-books, Sheakespeare's *Art of Singing, Parts II. and III.* Studies from Italian operas; French and English songs.

Vocal Sight Reading. Phrasing, punctuation and advanced study. Practice in operatic chorus-work.

IVa.

Organ. Schneider-Warren Pedal Studies. Easy sonatas by Mendelssohn, Merkel, Rheinberger. Preludes, fugues by Bach. *Twenty Studies* by Whiting. *Canonic Studies* by Chadwick.

Va.

Harmony. Construction and use of chords. Harmonizing from figured bass. Text-books, Goetshius *Tone Relations;* Logier's *Harmony.*

THIRD YEAR

Ib.

Violin. Sonatas by Bach. Studies by Schradieck-Alward, Wieniawski. Concertos and pieces by Sphor, Vieuxtemps, Mendelssohn, Dvorak.

IIb.

Pianoforte. *Gradus ad Parnassum.* Clementi-Tausig, *Das Wohl Temperirte Klavier* by Bach. *English and French Suites* by Bach. *Etudes* by Harberbier and Henselt. Sonatas, concertos and pieces by Beethoven, Weber, Mendelssohn, Chopin, Schubert and Grieg.

IIIb.

Voice Production. Study of trill, mordent, gruppetto, etc. *Messa de Voce.*

IVb.

Organ. Sonatas, preludes and *Chorale Vorspiele* by Bach. Concert pieces by Handel, Merkel, Salome, Whistling, Best, Rheinberger.

Vb.

Harmony. Counterpoint. Simple two and four part counterpart; double and florid counterpart. Canon, fugue.

FOURTH YEAR

Ic.

Violin. Studies by Paganini. Concertos and pieces by Beethoven, Brahms, Burch, Joachim and others.

IIc.

Pianoforte. Studies by Tausig and Chopin. Sonatas, concertos and concert pieces by Schumann, Brahms, Rubinstein, Liszt.

IIIc.

Organ. The greater preludes, fantasies and fugues of Bach. Sonatas and concert pieces by Thiele, Widor, Dubois, Builment and Saint-Saens.

IVc.

Harmony. Composition. Construction of musical forms, *i. e.*, the sonata, rondo, etc. Practical application in an original manner of these forms. Orchestration.

ORCHESTRAL INSTRUMENTS.

Instruction is also given on the viola, flute, piccolo, cornet, trombone, guitar and mandolin.

Opportunity is given to the advanced students of playing in the University Orchestra and the University Band.

GLEE CLUB.

A voluntary organization of students open to all interested in singing. In addition to the training for choral and solo work there are regular lectures on the theory of music. The Glee Club gives concerts in the local auditorium and in many near-by places.

PHARMACY

I.

Elements of Pharmacy—Lectures and recitations on the art and science of pharmacy, and demonstrations of the various pharmaceutical processes.

[Three hours a week for two terms.]

II.

Galenical Pharmacy. A laboratory course to accompany Course I. This course consists of the practical application of the pharmaceutical processes to the manufacture of official preparations of the United States Pharmacopoeia and of unofficial and N. F. preparations.

[Five hours a week for one term.]

III.

Inorganic Pharmacy. Laboratory, demonstrations and recitations. A thorough course in the preparation and testing of pharmaceutical and technical chemicals.

[Five hours a week for one term.]

IV.

General Pharmacy. A systematic classification of organic and inorganic drugs and preparations from a pharmaceutical standpoint followed by a close study of each of the classes.

[Two hours a week for two terms.]

V.

Magistral Pharmacy. Includes the manifold methods of extemporaneous pharmacy with consideration of incompatibility, posology, and the principles of elegant pharmacy. Dispensing and prescription practice.

[Three hours a week for one term.]

VI.

(a) **Pharmaceutical Chemistry.** Chiefly assaying, testing and manufacturing. Determination of melting and boiling points, and solubilities. Some attention is given also to toilet and commercial preparations with a view to the invention and development of original formulas. [Five hours a week for one term.]

(b) **Pharmaceutical Chemistry.** Assaying and manufacturing.

[Six hours a week for one term.]

VII.

General Pharmacy. Pharmaceutical analysis and assaying, micro-chemical, polariscopic and spectroscopic estimations, food analysis. Incompatibilities and methods of manufacture. Alkaloids and other active principles.

[Five hours a week for one term.]

VIII.

(a) **Materia Medica.** An elementary course in the general principles of the subject, covering the work outlined in the Syllabus.

[One hour a week for one term.]

(b) **Materia Medica.** This work embraces a detailed consideration of botanical drugs, their pharmaceutical definition and description, constituents, habitat, therapeutic action, use, dose and antidote. Attention is given also to mineral drugs and those of animal origin. They are studied individually at first, then in classes or groups. The grouping is so arranged as to make the subject comparatively easy for the student.

[Two hours a week for two terms.]

IX.

Pharmaceutical Arithmetic. This work includes a study of weights and measures, percentage, relationship of systems, reducing and enlarging formulas, alligation and chemical problems.

[Three hours a week for one term.]

X

Pharmacognosy. The indentification of preparations and crude drugs by their physical properties with special reference to quality and detection of adulteration. Attention is also given to the methods of preventing loss by improper storage or by the ravages of insects. Important drugs are studied under the microscope in cross section and in powder form.

[One hour a week for two terms.]

XI.

Commercial Pharmacy. A brief course in business methods, store-management, banking, accounting, and pharmacy.

[One hour a week for one term.]

XII.

Pharmaceutical Jurisprudence. A series of about ten lectures on Pharmaceutical Jurisprudence and Commercial Law.

XIII.

Pharmaceutical Latin. A brief course in the essentials of Latin with special reference to prescription reading and pharmaceutical nomenclature.

[Two hours a week for one term.]

THESIS.

During the third year the student is required to spend at least two hours a week in original research on a subject within the domain of Pharmacy. The results of this work are carefully recorded and must be typewritten and presented to the Faculty as a requirement for graduation.

PHILOSOPHY.

I.

(a) **Psychology.** This course is a fairly comprehensive treatment of the physical basis of consciousness. Experimental and Descriptive Psychology. The primary laws of consciousness; psycho-physical methods and results.

[Four hours a week for one term.]

(b) **Laboratory Exercises.** Experiments will be conducted with special reference to their value as aids to introspection.

[One hour a week for two terms.]

II.

(a) **Elements of Epistemology.** A study of the Scholastic theory of knowledge in relation to the teachings of Descartes, Leibnitz, Locke, Berkeley, Hume, Kant and Spencer.

(b) **Logic.** Text-book and lectures.

[Four hours a week for one term.]

III

General Metaphysics. Transcendental concepts: their value in different systems of philosophy.

[Four hours a week for one term.]

IV.

Cosmology. The fundamental concepts of natural science in relation to Thomistic philosophy.

[Four hours a week for one quarter.]

V.

Theodicy. The existence of God; His attributes. His presence in the universe.

[Four hours a week for one quarter.]

VI.

Rational Psychology. The problems of the mind. Nature, origin and destiny of the soul. The nature and freedom of the will.

[Four hours a week for one quarter.]

VII.

Ethics. A thorough study of the general principles underlying Ethics. Present day problems will be discussed in the light of these principles. A brief presentation of Sociology and Socialism will be given. The instruction will be by text-book, lectures and considerable collateral reading.

[Four hours a week for three quarters.]

VIII.

The History of Philosophy. This course is intended to give the student in consecutive form the principal systems and philosophers in the Ancient, Mediæval and Modern periods. It will likewise serve as a review of the subjects treated in the general course of Philosophy. Philosophic Movements of the present day and writers of note in present philosophic thought will be discussed.

[Two hours a week for two terms.]

IX.

This course is for students following the Law. Its purpose is to give them a thorough training in correct thinking and to acquaint them with the problems of ethics in general and in particular to note the bearings of ethical principles in the Law. Sociology and Socialism are briefly presented.

(a) **Logic.** Text-book, lectures and readings.
[Four hours a week for one term.]

(b) **Ethics.** Text-book, lectures and readings.
[Four hours a week for one term.]

X.

Philosophy, Brief Course. A general course designed to acquaint the student with the important problems of philosophy. The second term is taken up with Ethics. It is hoped sufficient interest will be aroused in the student in this abridged presentation to enable the student to continue, of his own accord, an intelligent study of this important subject. For Engineering and Science students.

[Four hours a week for two terms.]

XI.

Scholastic Philosophy. This is a two-year course in Scholastic philosophy based on regular Scholastic manuals—*Reinstadler's Elementa Philosophiae Scholasticae* is used at the present time. This course is given primarily for students who intend to enter the priesthood.

The following studies are given in one year: *Logica, Criteriologia, Ontologia, Cosmologia.* The studies of the other year: *Anthropologia, Theodicea,* and *Ethica.*

This course is preceded by Philosophy I and II, thus *Logica* and the first part of *Anthopologia* are gone over rapidly. The subjects are taught five periods a week. *Ontologia* and *Ethica* are each given one term; *Logica* and *Criteriologia, Cosmologia* and *Theodicea,* each one quarter. The History of Philosophy runs parallel with the subjects treated. There is considerable collateral reading demanded.

Student Discussions. From time to time throughout the year students will be required to read and discuss papers on various subjects in the field of philosophic inquiry.

Graduate Work in Philosophy. Graduate work in the department of philosophy, leading to the degree of Master or Doctor, may be undertaken by students who have pursued the course described above. Candidates who have made undergraduate studies elsewhere must give evidence of ability to begin specializing at once. In the first and second years, research work will be conducted in the seminar and the psychological laboratory. Students will have the benefit of frequent consultation with the professors.

PHYSICS

I.

(a) **Physics.** Instruction in Physics is given by lectures and recitations in which the general laws of mechanics, heat, acoustics, optics, electricity and magnetism are presented. The course is intended to meet the needs of those who desire a general knowledge of the subjects, as well as to lay the foundations for advanced work. Particular attention is paid to the correct statement of principles, so that in his advanced work the student will have nothing to unlearn or relearn.

[Three hours a week for two terms.]

(b) **The Laboratory Work** of this course consists of a series of experiments which verify and apply practically the fundamental principles of physics. The student also receives instruction in the use and careful handling of apparatus, accurate observation, and correct deduction of results. Neat and concise reports of all experiments are kept by each student and form the basis for the grades in his work.

[Two hours a week for two terms.]

II.

(a) **General Physics.** This course consists of lectures, recitations and class room experiments on the fundamental principles and properties of matter, fundamental units of measurements, dimensional formulas, physical units, time relations, vector and scalars; sound, origin and propagation, nature of sound, velocity of sound, sound waves, musical scales; light, geometrical optics, reflection, refraction, prisms, lenses, dispersion, physical optics, velocity of light, interference, diffraction, polarization, color; to be given in the first quarter and to be followed by:

(b) A detailed study of mechanics of solids, motion, work, energy, mechanics of a rigid body, elasticity, mechanics of fluids, fluids in motion, molecular mechanics, surface tension, solution and diffusion, supplemented with special notes and the solution of numerical problems. This is followed by:

(c) Heat, to be given in the first quarter of the second term, the course comprising a detailed study of the nature of heat thermometry, expansion, influence of temperatures upon the pressure of a gas, calorimetry, mechanical theory of heat, heat and mechanical energy, fusion, vaporization, hygrometry, liquefaction of gases, conduction, convection. Magnetism, action at distance, theory, ether strain theory, magnetic field, supplemented with special notes and the solution of numerical problems This is followed by:

(d) Electrodynamics and Electrostatics in the last quarter of the second term comprising the study of the fundamental electrical units, Ohms Law, electrolysis, electric cells, thermo-electricity, heating effect of currents, electrical condenser, electromagnetics, induction, dynamo electric machines, electrostatic field, electrostatic capacity and lectures on the electron theory, conduction through gases, radioactivity and electric waves, supplemented with special notes and solution of problems.

[Five hours a week for two terms.]

III.

(a) **Laboratory.** The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, heat, light, sound, electricity and magnetism. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

(b) **Laboratory.** For Mechanical and Electrical Engineering students. The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, light and sound. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

IV.

A course for the students of the College of Science. This course is the same for the first quarter as Part A of Course II, and is followed by a detailed study of mechanics, heat, and electricity. This course can be taken by students who have not had the higher mathematics, a working knowledge of Trigonometry is presupposed. Special emphasis is given to the correct statement of fundamental principles and definitions. The laboratory for this course is IIIa.

[Five recitation hours a week for two terms. Two laboratory hours a week for two terms.]

V.

Physical Laboratory. Students in Electrical and Mechanical Engineering will have a special set of experiments on electricity, comprising special advanced work in heat, magnetism, general electricity, galvanometry, electrical quantity, induction, the magnetic properties of iron. Accuracy in observation and in the calculation and recording of the results is required. This course must be preceded by Courses II. and IIIa.

(a) **Electrical Measurements.** Laboratory practice with galvanometers, voltmeters, ammeters and wattmeters, resistance work, the relation or equivalence between electrical energy and heat, capacity and inductance, insulation tests.

[One laboratory hour a week for one term.]

(b) **Calorimetry.** Accurate work in laboratory, using methods of mixtures, bomb and other calorimeters in measuring the calorific values of gaseous and solid fuels, quantitative measurements of radiation and conduction of heat as applied to pipe coverings, etc.

[One laboratory hour a week for one term.]

VI.

Meteorology. A government station was installed at the University by the United States Weather Bureau in March, 1912. An elementary course in meteorology is offered to students.

[One hour a week for one term.]

Research Work. Courses are offered in the Theory of Heat, Theory of Electricity and Magnetism, Optics, the Constitution of Matter, Conduction of Electricity by Gases, Theory of Sound, Hertzian Waves. Calculus is required to take up any of these topics.

PHYSIOLOGY

I.

(a) This course comprises lectures, recitations and demonstrations based upon some standard text-book of Human Physiology. A liberal supply of models, charts and manikins are at hand to facilitate all demonstrations required.

(b) Laboratory work consisting of a selected number of experiments so arranged as to give the student a fair insight into modern experimental physiology.

(c) A limited number of microscopical preparations are required to be made by each student, and he must examine a set of typical preparations in order to acquire a fair knowledge of the microscopical structure of the tissues and organs of the human body.

(d) During the course special lectures will be given upon personal, domestic and municipal hygiene.

[Four recitations and one laboratory period for one term.]

N. B.—Students of Pharmacy must take sections (a) and (d) and may select either (b) or (c).

A description of the courses in Physiology II, III and IV will be found under Medicine.

SOCIAL SCIENCE

ECONOMICS

I.

The Principles of Economics. A general survey of the whole field of Economics.

[Four hours a week for two terms.]

II.

The History of Economic Thought. A brief resume of the economic ideas of the Greeks and Romans; the influence of Christianity on economic doctrines; a brief treatment of the economists immediately preceding Adam Smith; schools of economic thought in the nineteenth century; the Classical, the Historical, the Aristuans, the Socialists, contemporary economic thought in the United States.

[Three hours a week for one term.]

III.

Money, Credit and Banking. This course considers the principles of money, the development of the currency and banking systems of the United States giving special attention to the principles and the operation of the Federal Reserve Act.

[Four hours a week for one term.]

IV.

Public Finance. This course includes a classification of public expenditure, the industrial functions of the state, problems of American taxation with special attention to the need and methods of budgetary reform.

[Four hours a week for one term.]

V.

Distribution of Wealth. Modern theories of rent, wages, interest and profits; a study based principally upon Ryan's "Distributive Justice and Carver's "Distribution of Wealth."

[Four hours a week for one term.]

VI.

The Principles of Economics. A brief course covering the whole field of Economics, designed for students of Law, Engineering and Science.

[Five hours a week for one term.]

VII.

The Elements of Transportation. A discussion of steam railroad, electric railway, ocean and inland water transportation. [Two hours a week for one term.]

VIII.

Industrial Organization and Combination. A general survey of the development of the principal forms of business organization; the single entrepeneur system, the partnership, the joint stock company, the corporation; social and private advantages and disadvantages of each form. Causes leading to the rise and development of the trusts; the various forms of combination; an examination of the remedies proposed for the solution of the problem.

[Three hours a week for one term.]

IX.

Business Law. This course is intended primarily for students of Journalism and Commerce. It deals briefly with contracts, negotiable instruments, sales, agency, partnership, property, corporations, bailments and carriers, suretyship and guaranty. It is an elementary course in law dealing particularly with those subjects that are more closely related to business and business administration. The students of Journalism will have special opportunity to acquaint themselves with the law of libel, the federal publicity law and likewise to become familiar with the principles of constitutional law and international law.

[Five hours a week for one term.]

X.

Corporation Finance. A study of the corporation as a form of business organization, the organization of a business, the work of promoter and underwriter, the various kinds of securities, bases of capitalization, receiverships and reorganization.

[Four hours a week for one term.]

XI.

Labor Problems. Woman and child labor, the sweating system, immigration, poverty and unemployment, the labor union movement, methods of industrial peace and labor legislation are among the subjects studied.

[Four hours a week for one term.]

XII.

Socialism and Social Reform. This course treats socialism as a body of theory, a world-wide revolutionary movement, and as a proposed social re-organization; what is its essence, what are its affinities. A practicable program of social reform is worked out, and the inter-relations of Social Reform and Socialism are considered.

{Four hours a week for one term.]

XIII.

Life Insurance. General principles of insurance; their development and application to modern business; organization forms, and technique of life insurance; a critical survey of the various kinds of obligations. Analysis of premium computation, the reserve, loading, surrender values, loans and surplus.

Property Insurance. Theory of risk and application to modern business; organization, forms, and technique, of fire, marine, fidelity, Surety, Title and Credit Insurance. [Three hours a week for one term.]

XIV.

Commercial Geography. A study of land forms; climate and economic influences; economic and political geography of Latin America, Russia, Asia Minor, India and the Far East; manufacturing industries of the United States; industrial management. A study of cost factors and manufacturing policy. Trade areas and routes.

[Two hour a week for one term.]

XV.

Foreign Commerce. American and foreign industries; needs of foreign markets; foreign advertising, salesmanship, correspondence and distributing problems, forms and problems of international shipping; export management; marine insurance; foreign exchange. Lectures, text and practical problems. The work of the course is supplemented by the student Chamber of Commerce with weekly meetings.

[Four hours a week for two terms.]

XVI.

Industrial History of England. The purpose of this course is to outline the important phases of the industrial history of England as distinct from its social and political problems. Special attention is given to problems associated with early rural and town life; early labor legislation; currency problems; the practical workings of early economic theories; factory legislation; modern forms of business organization.

[Two hours a week for two terms.]

XVII.

Industrial History of America. The treatment of this course is similar to that followed in Course XVI. The history begins with the industrial life of the colonies during the time of British control. Other problems treated are: industrial conditions during the Revolution; Hamilton's report on manufactures; the growth of the tariff; internal improvements; economic phases of the Civil War; present-day problems.

[Two hours a week for two terms.]

POLITICS

I.

The Principles of Politics. This course treats of the origin, nature, functions and sanctions of the state, the various forms of government, and the relation between liberty and authority.

[Four hours a week for one term.]

II.

American Government and Politics. Text, lectures, assigned topics; a study of the national, state, local and municipal governments.

[Four hours a week for one term.]

III.

American National Government. An intensive study of the national government of the United States, based principally on The American Republic by Woodburn.

[Two hours a week for one term.]

IV.

American State Government. An intensive study of the American state governments, based principally on State Government in the United States by Holcomb.

[Two hours a week for one term.]

V.

American City Government. A study of the American city, its government and some of its problems and methods.

[Two hours a week for one term.]

VI.

Political Parties and Practical Politics. This course considers the characteristics, definition and functions of a political party; government by party; party platforms; party machinery, its uses and abuses; public opinion and popular government, and such devices as the initiative, referendum, recall and direct primaries.

[Two hours a week for one term.]

VI.

Governments of Europe. This course takes up a comparative study of the constitutions of some of the most important European states, Great Britain, Germany, France, Italy, Switzerland, and Austria-Hungary.

[Two hours a week for one term.]

VIII.

Jurisprudence. A course covering (a) the outlines of the Science of Law. (b) The elements of International Law. (c) Lectures on selected topics of Roman and Canon Law. Lectures, readings, and examinations on required texts.

[Two hours a week for one term.]

SOCIOLOGY

I.

(a) **Outlines of Elementary Sociology.** Ethical considerations of the individual precede the course proper. To establish social ideals it is first necessary to establish the ideals of the individual. The nature and end of man. Then follows an analysis of society. Social forces, social laws. Principles of social control. Social inequalities. The nature, end and aims of society.

(b) **Social Ethics.** Traditional and modern ethics examined in relation to present-day social problems. The ethical content of social legislation. Natural law and natural rights. Individual and societal aspects of rights and duties in general.

[Four hours a week for one term.]

II.

The Family. Its organization and life; effects of economic and social changes upon the family and the home; disorganization of the modern family through divorce and race suicide; the subnormal family and its rehabilitation.

[Four hours a week for one term.]

III.

Problems of Poverty. Nature, extent, types and causes of poverty are studied. Special study of types of poverty that are socially preventable. Remedial and preventative measures. Social insurance. Ideals and attainments of organized charities.

[Four hours a week for one term.]

IV.

(a) **Social Pathology.** Several pathological conditions are studied but special attention is given to such conditions and facts as are of special interest to the student of law.

(b) **Crime, Punishment, Delinquency.** In connection with the course in social pathology. Crime. Brief history of criminology. Some sociological aspects of crime. Theories of punishment. In this course special attention is given to the mental and moral delinquent. Psychopathic tests for the juvenile and adult offender. Special study of the "Individual Delinquent," William Healy.

[Four hours a week for one term.]

Graduate Work. Advanced courses in economics, politics and sociology are provided for graduate students who wish to receive the degree of Master or Doctor.

ACCOUNTING

[Students in Accounting will have an opportunity to take up work in typewriting, phonography, commercial arithmetic and all elementary commercial subjects.]

I.

Elementary Accounting. The principles underlying accounting in its simplest forms as connected with bookkeeping and as a development of the same.

[Five hours a week for one term.]

II.

Intermediate Accounting. Continuation of Course I.

[Five hours a week for one term.]

III.

Advanced Accounting. The theory of accounting and auditing. Subject of general accounting completed.

[Five hours a week for one term.]

IV.

Special Forms of Accounting. Corporation; cost accounting; institutional accounting; special problems.

[Five hours a week for one term.]

POLISH

I.

Polish Language and Literature. Grammar (*Matecki's Part I.*) Etymology. Exercises in spelling and reading.

Grammar, *Part II.* Syntax. Exercises in Composition. Short essays.

II.

Rhetoric. (*Galle's Text-book*). Study of Essays in Models. (*Krasnowilski's Handbook.*)

III.

Literature. *The History of Polish Literature. Part I.* From the beginning to the era of Adam Mickiewicz. (*Handbook: Tarnowski-Prochnicki*).

IV.

Literature. *The History of Polish Literature. Part II.* From Adam Mickiewicz to the present time. (*Handbook: Tarnowski-Prochnicki*). Essays.

ROMANCE LANGUAGES

These courses include the study of French, Spanish, Italian, Portuguese, Old French, Provençal.

The principal aim is to impart an accurate reading knowledge of literary works written in these languages. In the study, however, of Old French and Provençal, special attention will be paid to philology.

FRENCH

I.

Grammar with written and oral exercises from English into French, and from French into English, including the essentials of French syntax and the common idiomatic phrases. Reading of selections in the grammar and also of three of the following works: "La Jeune Sibérienne," "Le Lépreux de la Cité d'Aoste," "Les Prisonniers du Caucase," Xavier de Maistre; "La Main Malheureuse," Guerber; "Contes choisis de Bazin;" "La Belle Nivernaise," Daudet.

[Five hours a week for two terms.]

II.

Review of the grammar with study of the syntax, the irregular verbs and the idioms, memorizing, dictations and conversation on practical topics and careful reading of five of the following works: "Colomba," Mérimée; one play of each of the three dramatists, Corneille, Racine and Molière. "Atala," "René," "Le Dernier Abencérage," Chateaubriand; Poèmes, Hugo.

[Five hours a week for two terms.]

III.

The study of this course is devoted chiefly to the prose and poetry of the nineteenth century, and includes essays on literary subjects, conversation. History of the French language and general view of the literature with special study in the development of the drama. The works read are: "Hernani," Hugo; "Le Voyage de Mr. Périchon," Labiche and Martin; "Mademoiselle de la Séglierè," Sandeau; "Méditations de Lamartine," "Causeries du Lundi," Ste. Beuve; "François Le Champi," Sand; one novel from Bazin or Bourget, "Poésies Choisies de Coppée."

[Four hours a week for two terms.]

N. B —The works studied are not necessarily the same every year.

SPANISH

I.

General outlines of grammar with composition. Translation of easy tales from *Trueba, Fernon Caballero Perez Escritch*, etc., with select fables of *Samaniego*, and *Irate*.

[Five hours a week for two terms.]

II.

Spanish prose and poetry of the eighteenth and nineteenth centuries, with composition and the history of the literature of the period.

[Five hours a week for two terms.]

III.

Literature of the sixteenth and seventeenth centuries; *Cervantes, Calderon, Lope de Vega.* History of the literature of the period, with essays in Spanish.

[Four hours a week for two terms.]

IV.

Early Spanish. *El Poema del Cid.* History of the literature of the fifteenth century.

ITALIAN

I.

A study of the grammar. Simple readings.

[Five hours a week for two terms.]

II.

Grammar reviewed; readings; special attention to Dante's "Divina Commedia." Conversation in Italian.

PORTUGUESE

I.

General outlines of grammar with compositions. Readings: *Perfil do marquez de Pombal, Camillo Castello Branco; Novelhas Historicas, Pinheiro Chagas; Lendas e Narrativas, Herculano; Campo de flores, Joao de Deus.*

[Five hours a week for two terms.]

II.

Sermoes, Padre Antonio Vieira. Os Lusiadas, Camoens. History of Portuguese literature.

OLD FRENCH

Special attention will be paid to the laws underlying the formation of the French language from the popular Latin. It is from this point of view that the old French authors will be read, especially *La Chanson de Roland.*

PROVENCAL

Language and literature, with readings from the works of the Troubadours.

[Five hours a week for two terms.]

ZOOLOGY

I.

Lectures and recitations.

This course includes the study of representatives of the lower and more advanced invertebrates including the life-history and the anatomy together with the discussion of their habits and distribution. Lectures on the comparative anatomy and development of the vertebrates.

[Four hours a week for the first term, two hours a week for the second term.]

II.

This is the laboratory course to accompany Zoology I.

There is an examination of selected types of invertebrates, illustrating the phylogenetic relationship of the different phyla. Then the student studies the systems of organs with reference to their function, structure and complexity in the vertebrate types, i. e., fish, frog, reptiles, bird and mammal.

[Four laboratory hours a week for one term.]

III.

Lectures, Recitations, Conference and Laboratory.

This course in intended both as introduction to and preparation for research.

Prerequisite: Zoology I and II.

An intensive study dealing with the comparative anatomy, development and phylogeny of the invertebrates and the vertebrates not considered in courses I., II.

This course, moreover, includes:

1. The study of one or two types of skeletons belonging to each order of mammalia as outlined in Kirsch's "Elementary Course in Mammalian Osteology;"

2. A thorough study of mammalia with reference to the cat, which course is mainly anatomical in nature;

3. An outline of comparative embryology of animals.

[Recitations: Two hours a week for two terms.]

[Laboratory: Four hours a week for two terms.]

Preparatory School

INSTRUCTORS IN THE PREPARATORY SCHOOL

REV JOHN SCHEIER, C. S. C.,
Greek and Latin.

REV. MICHAEL QUINLAN, C. S. C., PH. D.,
Mathematics and English.

REV. JOSEPH MAGUIRE, C. S. C., A. B.,
Chemistry.

REV. MICHAEL OSWALD, C. S. C., PH. D.,
Latin and Greek.

REV. JULIUS NIEUWLAND, C. S. C., PH. D.,
Science.

REV. CHARLES L. O'DONNELL, C. S. C., PH. D.
English.

REV. CHARLES DOREMUS, C. S. C., PH. D.,
French.

REV. THOMAS IRVING, C. S. C., PH. D.,
Mathematics.

REV. THOMAS BURKE, C. S. C., A. B.,
English.

REV. JOSEPH BURKE, C. S. C., PH. D.,
History and Mathematics.

REV. WILLIAM LENNARTZ, C. S. C., A. B.,
Latin and English.

REV. ERNEST DAVIS, C. S. C., A. B.,
Chemistry.

REV. LEO HEISER, C. S. C., A. B.,
Mathematics.

REV. ALPHONSE JUST, C. S. C.,
Latin and Music.

REV. THOMAS LAHEY, C. S. C., A. B.,
English.

REV. JAMES QUINLAN, C. S. C., A. B.,
Mathematics.

REV. FRANCIS ZERHUSEN, C. S. C., PH. D.,
German.

REV. JAMES McELHONE, C. S. C., A. B.,
English and History.

REV. PATRICK HAGGERTY, C. S. C.,
Mathematics.

REV. PETER HEBERT, C. S. C., A. B.,
Latin.

BRO. PHILIP NERI, C. S. C.,
Penmanship.

BRO. CYPRIAN, C. S. C.,
Bookkeeping, Phonography, and Typewriting.

BRO. BASIL, C. S. C.,
Music.

WILLIAM HINES, A. B.,
English.

FRANCIS XAVIER ACKERMAN, M. S.,
Drawing.

WILLIAM E. FARRELL, A. B.,
History.

JAMES HINES, PH. B.,
History and Mathematics.

JOHN LORIMER WORDEN, B. S.,
Drawing and Science.

JOSEPH PLANTE, A. B., LL. B.,
Civics.

REGIDIUS KACZMAREK, A. B., M. S.,
Polish.

KNUTE ROCKNE, B. S. PHAR.,
Chemistry.

JESSE VERA, E. E.,
Mathematics.

ARTHUR PINO, E. E.,
Mathematics.

ARTHUR HAYES, PH. B.,
English.

JOHN LEMMER,
English.

EMMETT LENIHAN, PH. B.,
Elocution.

VINCENT O'CONNOR,
Drawing and Mathematics.

THOMAS TRUDER, PH. B.,
Spanish.

JOSE CORONA,
Spanish.

ROYAL BOSSHARD,
Mathematics.

PREPARATORY SCHOOL

The University maintains a fully equipped Preparatory School under the same general government as the Colleges, but having its own special corps of instructors. The schedules of studies are arranged to meet the need of thorough preparation for collegiate work, and embrace courses which, while giving as wide an education as can be obtained in the very best High Schools, prepare students directly for the group of studies they may select when entering the Freshman year. Four different programs of instruction are offered to students, each containing such special courses as directly meet the needs of the twenty college groups, while all embrace common subjects which are indispensably necessary in acquiring a fairly liberal education. The period of instruction covers four years.

The equipment and facilities for study in the Preparatory School are most complete. The laboratories are extensive and fully supplied with the latest improved appliances. The classes pursuing any subject are divided into sections, each containing a limited number of students. The sections are purposely limited in order that each student may receive close attention from the instructor in every recitation and laboratory period.

Examinations for admission are held at the opening of the School in September and embrace the subjects completed in the highest grade in the Grammar School. The expense for tuition, board, etc., will be found on pages 37, 38 and 39. The following fees are special to the Preparatory School:

LABORATORY FEES

Science C & D.—Elementary Botany and Zoology, each	$2.50
Science E.—Elementary Chemistry....................	5.00
Science F.—Elementary Physics......................	5.00

STUDIES PREPARATORY FOR THE DEPARTMENT OF CLASSICS IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
Latin	5	A	Latin	5	A
English	5	A	English	5	A
History	5	C	Civil Governm'	5	A
Mathematics	5	A	Mathematics	5	B
Science	5	A	Science	5	B

SECOND YEAR

Latin	5	B	Latin	5	B
Greek	5	A	Greek	5	A
English	5	B	English	5	B
History	5	B	History	5	B
Mathematics	5	D	Mathematics	5	D

THIRD YEAR

Latin	5	C	Latin	5	C
Greek	5	B	Greek	5	B
English	5	C	English	5	C
History	5	A	History	5	A
Mathematics	5	C	Mathematics	5	E

FOURTH YEAR

Latin	5	D	Latin	5	D
Greek	5	C	Greek	5	C
English	5	D	English	5	D
Science	5	E or F	Science	5	E or F
French or German	5	A	French or German	5	A

STUDIES PREPARATORY FOR THE DEPARTMENTS OF LETTERS, HISTORY AND ECONOMICS AND JOURNALISM IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
Latin	5	A	Latin	5	A
English	5	A	English	5	A
History	5	C	Civil Governm'	5	A
Mathematics	5	A	Mathematics	5	B
Science	5	A	Science	5	B

SECOND YEAR

Latin	5	B	Latin	5	B
French or German	5	A	French or German	5	A
English	5	B	English	5	B
History	5	B	History	5	B
Mathematics	5	D	Mathematics	5	D

THIRD YEAR

Latin	5	C	Latin	5	C
French or German	5	B	French or German	5	B
English	5	C	English	5	C
History	5	A	History	5	A
Mathematics	5	C	Mathematics	5	E

FOURTH YEAR

Latin	5	D	Latin	5	D
French or German	4	C	French or Greman	4	C
English	5	D	English	5	D
Science	5	E or F	Science	5	E or F
Elective	5		Elective	5	

STUDIES PREPARATORY FOR THE COLLEGE OF SCIENCE

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
Latin	5	A	Latin	5	A
Science	5	A	Science	5	B
History	5	C	Civil Governm'	5	A

SECOND YEAR

English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
Latin	5	B	Latin	5	B
Science	5	D	Science	5	C or G
History	5	B	History	5	B

THIRD YEAR

English	5	C	English	5	C
Mathematics	5	C	Mathematics	5	E
German	5	A	German	5	A
Science	5	E	Science	5	E
History	5	A	History	5	A

FOURTH YEAR

English	5	D	English	5	D
German	5	B	German	5	B
Science	5	F	Science	5	F
Drawing	5	A	Drawing	5	B
Mathematics	5	F	Elective	5	

STUDIES PREPARATORY FOR THE COLLEGES OF ENGINEERING AND ARCHITECTURE

FIRST YEAR

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
History	5	C	Civil Governm'	5	A
Science	5	A	Science	5	B
*German	5	A	German	5	A

SECOND YEAR

English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
History	5	B	History	5	B
Science	5	D	Science	5	C or G
German	5	B	German	5	B

THIRD YEAR

English	5	C	English	5	C
Mathematics	5	C	Mahematics	5	E
Science	5	E	Science	5	E
German	5	C	German	5	C
History	5	A	History	5	A

FOURTH YEAR

English	5	D	English	5	D
Mathematics	5	F	Drawing	5	B
Drawing	5	A	Science	5	F
Science	5	F	Elective	10	
Elective	5				

*French or Spanish may be substituted for German.

Courses of Instruction

CHRISTIAN DOCTRINE

This is a four year course—Moral, Dogma, Liturgy, Church History. Portions of the Scriptures are given each year.

CIVIL GOVERNMENT

A.

This is a study of the science of government in connection with American institutions, and is intended to give the student some knowledge of the general principles of government and of the American Constitution. The subject begins by defining government; then is considered the object and necessity of government; origin of civil society; the principle of suffrage; different forms of government defined and compared; theories of representation. These topics necessarily are treated briefly, as the principal part of the course consists of a study of the Colonial government, the Articles of Confederation and their defects, the formation of the Constitution and its adoption. The study further comprises a critical analysis of each article and section of the American Constitution, thus enabling the student to acquire a clear conception of the division of powers of the National Government and the duties and responsibilities of each department.

[Five hours a week for one term.]

DRAWING

A.

This work is based on the rudiments of drawing and consists of the training necessary for the hand and the eye. Sketching is also done from simple objects of various forms. Charcoal from form, pencil sketching, charcoal sketching.

[Five hours a week for one or two terms.]

B.

Courses in Lettering, Geometrical Drawing and Elementary Projections in pencil and in pen and ink, preparatory to Drawing I in the Engineering Programs. A sufficient number of plates must be made by each student to prove his fitness for Drawing I.

[Five hours a week for one term.]

ENGLISH

A.

(a) Review of Grammar. General Rhetoric. Daily exercises in correct English, and weekly exercises in prose composition.

(b) Elements of Versification. Verse-writing and memory work in Poetry.

(c) Readings: Irving's *Sketch Book;* Stevenson's *Treasure Island;* Longfellow's *Evangeline;* Cooper's *Last of the Mohicans;* Poe's *Tales;* Hawthorne's *Great Stone Face, The Birthmark* and other stories; Palgrave's *Golden Treasure;* Hale's *The Man Without a Country;* Aesop's *Fables;* the *Merchant of Venice, Julius Caesar.*

[Five hours a week for two terms.]

B.

(a) Special Rhetoric. American Literature. Exercises in correct English and theme work in the Prose Forms.

(b) The Verse Forms. Theory, practice and memory work.

(c) Readings: Blackmore's *Lorna Doone; Poe's Poems;* Lamb's *Essays of Elia;* Scott's *Ivanhoe, The Lady of the Lake;* Coleridge's *The Ancient Mariner;* George Eliot's *Silas Marner;* Longfellow's *The Courtship of Miles Standish; Macbeth, As You Like It.*

[Five hours a week for two terms.]

C.

(a) History of English Literature. Written work in prose and verse. Memory work.

(b) Readings: Tennyson's *Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur;* Washington's *Farewell Address;* Webster's *First Bunker Hill Oration;* Carlyle's *Essay on Burns;* Chaucer's *Prologue;* Bacon's *Essays;* Goldsmith's *Vicar of Wakefield;* Thackeray's *Henry Esmond; Hamlet, The Tempest.*

[Five hours a week for two terms.]

D.

(a) Review of Grammar and Rhetoric. Special work in the literary types. Written work in prose and verse.

(b) Memory work in poetry and prose.

(c) Readings: Tennyson's *Idylls of the King;* Gate's *Selections from Newman;* Newman's, *The Dream of Gerontius; King Lear; A Midsummer Night's Dream;* other selections illustrative of the text-work given.

[Five hours a week for two terms.]

FRENCH

A.

Elements of pronunciation of French with exercises in correct reading. Grammar with oral and written exercises in the different parts of speech including the verbs and the essentials of Syntax. Reading of the selections in the grammar and also of three of the following works. "La Jeune Sibérienne," De Maistre; "La Mare au Diable," "La petite Fadette," Sand; "Morceaux Choisis," Daudet; "Le Chien du Capitaine," Enault; "Le Pater," Coppée.

[Five hours a week for two terms.]

B.

Review of the grammar, syntax, irregular verbs, composition, dictation and conversation on practical topics. Reading of five of the following works: "Fables Choisies," La Fontaine; "Contes Choisis," Balzac; "Le Cid," Corneille; "Athalie," Racine; "L'Avare," Molière; "La Question d'Argent," Dumas; "Lettres de Mon Moulin," Daudet; "Madame Therèse," Erckmann-Chatrian.

[Five hours a week for two terms.]

C.

History of the origin and development of French literature. Composition, conversation, memorizing. Reading of the best authors of the nineteenth century. "Ruy Blas," Hugo; "Mémoires d'Outre Tombe," Chateaubriand; "Le Tailleur de Pierres," Lamartine; "Le Barbier de Séville," Beaumarchais; "Expèdition de Bonaparte en Egypte," Thiers; "Ste. Elizabeth de Hongrie," Montalembert.

[Five hours a week for two terms.]

N. B.—The works studied are not necessarily the same every year.

GREEK

A.

First Greek Book.

Epitome of the New Testament. *Stoffel.*

[Five hours a week for two terms.]

B.

Grammar. Etymology. *Hadley and Allen.*

Xenophon. Anabasis, Books I and II. *Harper and Wallace.*

Second Greek Exercise Book. *Heard.*

Epitome of the New Testament, continued. *Stoffel.*

[Five hours a week for two terms.]

C.

Grammar. Syntax. *Hadley and Allen.*

Xenophon. Anabasis, Books III and IV. *Harper and Wallace.*

Second Greek Exercise Book, completed. *Heard.*

Epitome of the New Testament, completed. *Stoffel.*

Homer, Iliad, Books I–VI. *Seymour.*

[Five hours a week for two terms.]

GERMAN

A.

Grammar. Translation of simple German prose into English; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

[Five hours a week for two terms.]

B.

Grammar. Translation into German of narrative prose and selections from history. Sight reading of selections from history.

[Five hours a week for two terms.]

C.

Sight reading of plays, poems and prose writing Translation of selections from history and literature; original essays.

[Four hours a week for two terms.]

HISTORY

A.

Ancient History. The Eastern Nations. The History of Greece and of the Empire of Alexander. The Story of Rome. The Establishment of the Empire, and the rise of Christianity. The Roman-German, or Transition Age. [Five hours a week for two terms.]

B.

Mediæval History and Modern History. The Barbarians and their Kingdoms. Mohammedanism and the Saracen Caliphs. The holy Roman Empire. The Great Schism and the Rise of the Nations of Modern Europe. The Renaissance. The Age of Discovery. The Protestant Reformation. The Power of Spain and Germany. The Age of Louis XVI., and the Rise of Russia. The Spanish and Austrian Successions. The Empire of England. The American Revolution. The French Revolution and the Wars of Napoleon. The Revolutions and Spirit of Nationality. The Formation of Germany and Italy.

[Five hours a week for two terms.]

C.

American History. A brief outline of the more important periods dealing with the beginning, growth and final formation of the republic; the principal causes leading to this formation; essential topics in the history of the country.

[Five hours a week for one term.]

LATIN

A.

First Year Latin, *Collar and Daniel.*
Selections from the Viri Romae. *Rolfe.*

[Five hours a week for two terms.]

B.

Grammar. Etymology. *Bennett.*
Caesar. Gallic War, Books I–IV. *Greenough.*
Nepos. Selected Lives. *Roberts.* [Elective.]
Latin Composition (Part I). *D'Ooge.*

[Five hours a week for two terms.]

C.

Grammar. Syntax, *Bennett.*
Cicero. Orations against Catiline. *Kelsey.*
Ovid. Selections. *Kelsey.*
Sallust. Catiline, *Nail.* [Elective.]
Latin Composition (Part II). *D'Ooge.*
[Five hours a week for two terms.]

D.

Grammar. Review. *Bennett.*
Cicero. Selected Orations and Letters. *Kelsey.*
Vergil. *Aeneid,* Books I–VI. *Frieze.*
Latin Composition (Part III). *D'Ooge.*
[Five hours a week for two terms.]

MATHEMATICS

A.

Algebra. This course for beginners in Algebra includes a study of the primary fundamental principles necessary to the courses which follow. The subjects dwelt upon in particular are factoring, highest common factor and least common multiple, which are afterward applied in their relation to fractions and the reduction of complex fractions. In as far as possible, concrete examples of their applications to kindred scientific subjects are applied by the teacher.

[Five hours a week for one term.]

B.

Algebra. In this course the study of equations is begun and continued through equations of the first degree. Fractional equations, systems of simultaneous equations, involutions, radicals and exponents complete the course, which is supplemented whenever possible with problems of practical application.

[Five hours a week for one term.]

C.

Algebra. This course begins with quadratic equations, pure and unaffected, followed by systems of simultaneous quadratic equations and those forms of radical equations of higher degree which may be solved by quadratic methods. Ratio and proportion, indeterminate equations, surds, imaginaries, inequalities, the progressions and the binomial theorem finish the work in this course. As in the preceding courses, special stress is placed upon the application of the theory to such examples as will show its application to elementary scientific subjects.

[Five hours a week for one term.]

D.

Geometry. This subject is completed as far as the end of plane geometry and includes a study of the theorems with proofs of exercises and original propositions. The habit of independent thinking is cultivated to some extent by the solution of special problems of a concrete nature intended to exhibit the relation of the process studied to practical examples.

[Five hours a week for two terms.]

E.

Geometry. This course is an extension of the preceding course. Planes, solid angles, polyhedrons, the cylinder, cone and sphere are all studied in detail, and the solution of original exercises and propositions of application is made a feature of the course.

[Five hours a week for one term.]

F.

Trigonometry. This subject includes both plane and spherical trigonometry. The work done is the equivalent of that in most of the elementary text-books. Special attention is given to goniometry on account of its application to calculus, and examples of a concrete nature are abundantly supplied.

[Five hours a week for one term.]

SCIENCE

A.

Physical Geography. An introductory and elementary study of the earth and its environments. The student will be led into a closer sympathy with the world about him. The various types of plant and animal life, together with topographical and climatic conditions will be considered.

[Five hours a week for one term.]

B.

Physiology. Lectures, recitations and demonstrations with the stereopticon. The study of the human skeleton including the physiology and hygiene of the bones. The action, relation, structure and hygiene of muscles. The digestive, circulatory and excretory systems and structure of the nervous system and simple experiments on the same.

[Five hours a week for one term.]

C.

Botany. This course is designed for beginners in this subject; it includes a study of the higher plants with reference to structure of root, stem, leaf, flower and seed. An introduction to the lower forms of plant life and their classification is also given.

[Five hours a week for one term.]

D.

Zoology. This course includes an introduction to the subject with studies of representative forms and their classification in the different groups of the animal kingdom. The subject is taught by recitations and laboratory work.

[Five hours a week for one term.]

E.

(a) **Chemistry.** An introductory course of experimental lectures on familiar subjects such as water, the air and its constituents, common salt, etc., leading up to discussions of the more important elements and their properties, and the fundamental laws and phenomena of chemistry. Text-book, *Maguire's Elements of Chemistry.*

[Three hours a week for two terms.]

(b) **Experimental Chemistry.** A laboratory course to accompany Course (a). A series of exercises to be performed by each student, and having as their main object the cultivation of the student's powers of observation and faculty of inductive reasoning. These exercises comprise a study of the principal metallic elements, including their preparation, properties and more familiar compounds. The directions for each experiment are made as brief as possible; the observation of facts and the drawings of correct conclusions therefrom being left, so far as the nature of the experiment will permit, to the student. *Laboratory Manual, Maguire.*

[Two hours (four hours of actual work) each week for one year.]

F.

(a) **Physics.** Introduction in elementary physics is given by lectures and recitations in which the general laws of mechanics, heat, acoustics, optics, electricity and magnetism are presented. The course is intended to meet the needs of those who desire a general knowledge of the subject, as well as to lay the foundation for advanced work. Particular attention is paid to the correct statement of principles so that in his advanced work the student will have nothing to unlearn or relearn.

[Three hours a week for two terms.]

(b) **Laboratory Work** of this course consists of a series of 60 experiments which verify and apply practically the fundamental principles of physics. The student also receives instruction in the use and careful handling of apparatus, accurate observation and correct deduction of results. Neat and concise reports of all experiments are kept by each student and form the basis for the grades in this work.

[Two hours (four hours of actual work) each
week for one year.]

G.

Astronomy, Descriptive. This course is intended to give students as much knowledge of astronomical facts as can be obtained with only an elementary training in mathematics. The study consists of a description of the earth, its form, size, density, and motion; a study of the moon and her motions; the sun and its relation to the earth; an account of eclipses, refraction and aberration of light. It includes a description of the planets, their distances, dimensions, and physical conditions; a study of parallax, diurnal and annual; an account of meteors and comets. Instruction is given to enable the students to identify the more prominent stars and constellations. The study of Cosmogony is considered briefly as well as an explanation of the different systems of Astronomy. The subject is given by lecture and text-book.

[Five hours a week for one term.]

THE COMMERCIAL HIGH SCHOOL

The Commercial School is designed to fuse with the ordinary High School or preparatory program of studies a special preparation for the processes of modern commercial life. Accordingly, the commercial program consists of a selection of the more important subjects in the High School curriculum to which are added the classes and experimental facilities found in a completed and up-to-date commercial college.

Owing to conditions specially favorable to study, Notre Dame claims to give the students of this school a more complete business training than can be obtained in any purely commercial college. The authorities require that students taking this program shall have completed two years of a regular High School or its equivalent. Special arrangements, however, will be made for young men who have no High School training, but who may have had practical business or office experience. Such students may follow the courses of this program of studies but will not be considered candidates for degrees. A certificate stating the field covered by their studies, will, however, be presented to them. Graduates of High Schools or equivalent preparatory schools will ordinarily be able to complete the work of this program in *one year*.

PROGRAM OF INSTRUCTION

ARITHEMTIC

A. Percentage; ratio and proportion, as far as involution and evolution.

B. Percentage; ratio and proportion (reviewed), involution and evolution; arithmetical and geometrical series; higher percentage; mensuration; arithmetical analysis.

COMMERCIAL PROGRAM*

SUBJECTS: First Term	Hrs. a Wk.	Course	SUBJECTS: Second Term	Hrs. a Wk.	Course
FIRST YEAR					
English	5	A	English	5	A
Mathematics	5	A	Mathematics	5	B
History	5	C	Civil Governm'	5	A
German	5	A	German	5	A
Science	5	A	Science	5	B
SECOND YEAR					
English	5	B	English	5	B
Mathematics	5	D	Mathematics	5	D
History	5	B	History	5	B
German	5	B	German	5	B
Science	5	E	Science	5	E
THIRD YEAR					
English	5	C	English	5	C
Bookkeeping	5	A	Bookkeeping	5	A
Phonography	5	A	Phonography	5	A
Arithmetic	5	A	Arithmetic	5	B
Typewriting	5	A	Typewriting	5	A
Penmanship	2		Penmanship	2	
FOURTH YEAR					
English	5	D	English	5	D
Bookkeeping	5	B	Bookkeeping	8	C
Phonography	5	B	Phonography	5	B
Com. Law	5	A	Bus. English	3	
Typewriting	3	B	Typewriting	3	A

*First and second year or equivalent required for entrance on commercial work proper.

Students who do not take Phonography will continue their mathematics or language in the third year and take up Physics in the fourth year.

BOOKKEEPING

A. Preparatory instruction and definitions; initiatory sets of Double Entry; retailing by Double Entry; special practice in writing business papers and business forms. Single Entry; changing Single to Double Entry.

B. Retailing; wholesaling; shipping and commission; jobbing; manufacturing; instalment and state agencies; joint stock companies; banking.

C. Business Practice and Office Work. Introducing Loose Leaf Accounting, Card Ledger Accounting, Loose Leaf and Sales Book, and the Voucher System of Bookkeeping and Business English.

COMMERCIAL LAW

A. Text-book, assigned topics.

BUSINESS ENGLISH

Practical topics. Speed and accuracy in work.

PHONOGRAPHY

A. Isaac Pitman's Short Course in Phonography.
B. Speed Class.

TYPEWRITING

A. The Van Sant System of Touch Typewriting.
B. Speed Class. Mimeograph and Hektograph work.

GRAMMAR SCHOOL WORK

The courses of the Preparatory School outlined above are equivalent to those of a High School. There is also a Junior Preparatory Department in which are taught all the branches of a Grammar School,—the students having every opportunity for preparing themselves as rapidly as possible for High School Work.

THE SCHOOL FOR MINIMS

For the care, and training of boys under the age of thirteen years, there has been established a primary school to which the most scrupulous attention has always been paid by the authorities of the University—it is known as St. Edward Hall.

Thorough and comprehensive instruction in all the elementary branches of an English education is here imparted, together with a rudimentary knowledge of Latin, French, German and Algebra. Vocal music and drawing involve no extra charge. The pupils of this department are taught by Sisters of the Holy Cross.

DISCIPLINE

The following is the order of the day: Rising at 6:30 a. m., toilet, etc., seven, breakfast, after which there is a short time given to exercise on the campus; eight, study; half-past nine, luncheon; ten, classes and study; a quarter to twelve, toilet; twelve, dinner, followed by recreation; half-past one, classes and study; three, recreation and luncheon; half-past four, classes and study; a quarter to six, toilet; six, supper, and recreation; half-past eight, retiring. From this it may be seen that while the Minims devote almost seven hours a day to study, they are never more than two hours in succession in the class-room. The recreation and exercise in the fresh air after each period of study unbend the mind and prepare the boys to return to their classes refreshed and ready to work.

The Minims are always under supervision during the hours of recreation as well as in the class-room and the study-hall. The presence, however, of the prefect is far from being a restraint on the amusement of the boys; for while it is the duty of the prefects to insist that their young charges shall always keep within the limits of the strictest propriety, they at the same time take part in all sports, organize games, and do everything in their power to foster the love for exercise. The playground is a broad, level, eight-acre field, well supplied with turning poles, swings, ladders, rings, parallel bars, and all other necessary gymnastic apparatus. That the boys make good use of them can be seen from their healthy, happy appearance, which invariably attracts the notice of visitors. Connected with the playground is a brick play-hall, one hundred and sixty feet long and heated by steam. In this hall the boys play in rainy or cold weather.

The Sisters preside at the toilet; they clean and mend the clothing and see to all the needs and to the comfort and convenience of the Minims. Baths are taken every few days. Underclothing is changed regularly. Great care is taken that the boys be neatly dressed, and that the clothing be suitable for the season.

SOCIETIES

There are two societies in the Minim Department, that of the Guardian Angels of the Sanctuary, which has for its object to supply servers for the Chapel services, and the Sorin Association, which has been established with a view to give the pupils a start, as early as possible, in elocution. The society is presided over by one of the professors, who finds it a pleasant duty to draw out the talent of these interesting young orators. Meetings are held once a week, after school hours. These meetings are a source of pleasure as well as of profit. The members prepare original compositions, deliver declamations, are trained to debate, etc. Only the best behaved and more advanced in studies are admitted to membership. To encourage the young literary society, a gold medal for elocution is annually awarded at Commencement to the most deserving member.

GENERAL REMARKS

The discipline to which the Minims are subjected is much milder than that which is suited to members more advanced in age. Recourse is scarcely ever had to punishment. Those in charge endeavor to govern by kindness and gentleness, and by appealing to the boys' sense of honor.

There are gold medals awarded at the end of two full years to those whose deportment has been unexceptionable during that period. As this fact is made known to the Minim immediately after his entrance, he generally endeavors to shape his conduct with a view to receiving an honor. The greatest care is taken to inculcate the practice of refined manners. Every effort is made to foster respect and affection for parents, to whom they are expected to write at least once a week.

Not the least of the advantages enjoyed by the Minims is their complete separation from the older students. A commodious building known as St. Edward Hall, affording ample accomodation for over one hundred pupils, is devoted to their use. It is four stories in height, one hundred and fifty feet long, and forty-five feet wide, heated by steam, supplied throughout with electric light, and provided with hot and cold water. The ceiling in the study hall, classrooms and sleeping apartments is fifteen feet high. The windows are large and numerous, affording abundant light and ventilation. The study hall commands a charming view from each of its eleven windows. It is tastefully decorated with statuary, pictures, plants, etc. Besides the pleasure the Minims derive from studying in this bright, cheerful hall, their tastes are cultivated by coming into contact with objects so refining. Fronting the building is a handsome park, which, with its fountains, rare trees and flowers, adds not a little to the beauty of St. Edward Hall, as well as to the happiness of its pupils.

These remarks, which have been made to satisfy parents and others who frequently write for more detailed information, will show that, while the Minims have every advantage to aid them in acquiring a foundation for future study, they have a home, where they enjoy the same ease and freedom that they would enjoy under the care of their mothers. For further information regarding the School for Minims apply for a special catalogue.

EXPENSES

For Students under Thirteen Years of Age

Matriculation Fee (first year only)	$ 10.00
Tuition, Board, Washing, Mending, Bed and Bedding, etc., per school year	350.00

Payable in advance as follows:

First Payment.—On Entrance in September.

Matriculation	$ 10.00
Board and Tuition	250.00
Gymnasium	2.50
Lecture and Concert Course Ticket	3.00

Music optional. For rates see below.

Second Payment.—On January 15

Balance on Board and Tuition	$100.00

The charges for lessons on piano, violin, guitar or mandolin, and the use of the instrument, is fixed at $50.

Accounts are subject to sight draft, without notice if not paid within ten days after they have been rendered.

Each pupil requires six shirts or waists, four suits of underwear, three night shirts, twelve pocket handkerchiefs, six pairs of stockings, six towels, two hats or caps, two pairs of shoes, a pair of overshoes, three suits of clothes, an overcoat, toilet set, blacking brush, soap, and a hand mirror. This direction concerning clothing is a suggestion, not a regulation. Any of the above supplies can be procured through the students' Office at the University.

LIST OF STUDENTS

Enrolled During the Year 1916-17

Abbott, John Vincent	New Jersey
Allen, Leslie Millard	Indiana
Allen, William Louis	Illinois
Allison, Jr., William Mack	Texas
Amador, Doroteo	Philippine Islands
Ambrose, John Horace	Maine

Anderson, Barrett John	California
Anderson, Cyril Robert	Illinois
Andres, William Joseph	Connecticut
Andrews, Francis Alvin	Illinois
Antleitner, Harry Joseph	Missouri
Aranas, Emilio	Philippine Islands
Armstrong, John Oswald	Colorado
Ashdown, Walter L. G.	Illinois
Athanasius, Orestes	New York
Aviles, Fernando Manuel	Cuba
Aviles, Jose Francisco	Cuba

Bachman, Charles William	Illinois
Baczenas, Jr., John Theodore	Ohio
Bader, Clarence Wagner	Indiana
Bader, Eugene Francis	Ohio
Baglin, Charles Norbert	New York
Bahan, Leonard Finlan	Kentucky
Bailey, Edward Riley	Pennsylvania
Baine, Charles Francis	Massachusetts
Baker, William Roger	Massachusetts
Baldwin, George Jesse	Indiana
Balfe, John Thomas	New York
Barba, Manuel Francisco	Central America
Barbour, Albert Howard	Illinois
Barbour, William Howard	Illinois
Barrett, Edward Francis	Minnesota
Barry, George Francis	Illinois
Barry, Norman Christopher	Illinois
Barry, Jr., James Edward	New York
Barry, Paul S.	Iowa

Barry, Thomas Donald	Illinois
Baujan, Harry Clifford	Illinois
Beacom, Thomas H.	Oklahoma
Beaghan, Philip Vincent	Illinois
Becker, John Henry	Nebraska
Becker, George Albert	Nebraska
Becker, Victor Francis	Iowa
Bedford, Vernon Oswald	Indiana
Beh, Carleton Dietz	Iowa
Benitez, Enrique Manuel	Mexico
Benitz, William Howard	Indiana
Bentley, Walter John	Illinois
Bergman, Arthur Joseph	Indiana
Bergman, Ralph William	Iowa
Berkey, Kenneth Ray	Indiana
Berkmeyer, John William	Indiana
Berner, Leo Sebastian	Indiana
Bernoudy, Alfred Charles	Illinois
Berra, Humbert Antonio	Illinois
Berryhill, Jackson Glynn	Oklahoma
Besten, Emil Alexis	Kentucky
Biadeskiewicz, Lawrence	Illinois
Bielecki, Stanislaus Joseph	Indiana
Bierne, Joseph	New York
Biggers, Clarence Ernest	Georgia
Bingenheimer, Leo John	Wyoming
Birk, Harold W.	Illinois
Birmingham, James Aloysius	New York
Birmingham, Frank Edward	New York
Birmingham, Joseph Louis	New York
Blackman, Everett Augustus	Illinois
Blair, Thomas Richard	Mexico
Blake, Leslie James	Nevada
Boeckling, Ralph Anton	Ohio
Bohan, William Louis	Illinois
Bohrer, Albert Thomas	Indiana
Boland, Francis Joseph	Massachusetts
Boland, James I.	Michigan
Bolger, Henry Joseph	Wisconsin
Borne, Bernard Anthony	Illinois
Bosshard, Royal Henry	Illinois
Bott, John Larimour	Ohio

Bott, Louis King	Ohio
Boyer, John Stanislaus	Indiana
Boylan, James Kenneth	Indiana
Boyle, Frank John	Indiana
Boyle, Joseph Justin	Indiana
Boyle, Stephen John	Iowa
Bozek, Joseph	Michigan
Braas, Charles Joseph	New York
Bradley, Byron Bernard	Oklahoma
Brady, Bernard Robin	Ohio
Brady, Harry Michael	Ohio
Branagan, William T	Iowa
Brandy, Jr., Joseph Ralph	New York
Brannigan, Joseph Michael	Michigan
Braun, Herbert Spencer	Illinois
Braun, Rosslyn	Illinois
Braun, Sigmund Milton	Illinois
Breen, Hubert Francis	Illinois
Breen, Edwin Thomas	Illinois
Brennan, James Henry	Illinois
Brennan, Martin George	Indiana
Brennan, Thomas James	Indiana
Brentlenger, Melvin Grafton	Indiana
Breslin, Harry Patrick	Pennsylvania
Brice, John Patrick	Indiana
Brisch, George Andrew	Illinois
Brosnahan, Henry Joseph	North Dakota
Brown, Clarence Henry	Michigan
Brown, Francis Aloysius	Michigan
Brown, William Henry	Indiana
Browne, Robert Matthew	Texas
Brungardt, Adam P	Kansas
Bryan, George Raymond	Ohio
Bryce, Alfred Lyndon	New Jersey
Buckley, John Joseph	Ohio
Buckley, Patrick	Ireland
Buzinski, Sigismund	Indiana
Burke, Emmett Francis	Illinois
Burt, Harry Raphael	Texas
Butler, George Vincent	New York
Butler, Thomas Francis	Illinois
Butler, John Richard	Missouri

Butterworth, Lawrence Gilbert	Indiana
Byrne, Thomas MacQuaide	Illinois
Byrne, William Joseph	Mississippi
Byrne, William Philip	Nebraska

Cadett, Arthur Aloysius	District of Columbia
Cain, Giles Leo	Illinois
Calay, Arthur Vincent	Michigan
Call, Charles Warren	Michigan
Call, Leonard Mooney	Michigan
Callaghan, John Henry	Ohio
Callan, John Lawrence	Pennsylvania
Campbell, Jr., John Bernard	Kentucky
Campbell, John D	New York
Cantillon, Richard Joseph	Illinois
Carey, Charles Maurice	Kansas
Carey, Joseph Thomas	Kansas
Carey, Frank Jeremiah	New York
Carleton, Gerald John	California
Carmody, James Edward	Louisiana
Carr, Daniel Joseph	Pennsylvania
Carr, Marvin Joseph	Illinois
Carr, Robert Cushman	Illinois
Carrico, Aloysius Leonard	Kentucky
Carrico, Francis Joseph	Kentucky
Carroll, Albert	Illinois
Carroll, Eugene	Illinois
Carroll, Joseph John	New Jersey
Carroll, Stuart Henry	Missouri
Cassidy, Clifford Frederick	Indiana
Cassidy, John Edward	Illinois
Castillo, Andres Lope	Cuba
Cavanaugh, John Malachi	Ohio
Cavanaugh, Francis Patrick	Michigan
Cavaness, George Leo	Kentucky
Cavers, Douglas Guy	Nebraska
Cavers, Keith McKenzie	Nebraska
Centlivre, Frank Nierman	Indiana
Chaplin, Howard H	Ohio
Chartrand, Joseph	Michigan
Clancy, Joseph Raymond	Canada
Clancy, John Edward	Illinois

Clark, Earl James	New York
Clark, Earl William	Minnesota
Clay, Odin Edward	Texas
Cleary, Jr., James Patrick	Michigan
Cleary, Gerald Joseph	Michigan
Cleary, Harold James	Michigan
Cleary, Lawrence John	Michigan
Clifford, James	Ohio
Cline, Raymond Otis	West Virginia
Clohessy, Francis Joseph	New York
Coan, Leo James	Tennessee
Coats, William James	Illinois
Cofall, Stanley Bingham	Ohio
Coffey, Daniel Edward	Illinois
Coker, Wallace Earl	Texas
Cole, William Francis	Illinois
Cole, William Henry	Indiana
Collins, Frederick	Indiana
Conaghan, Paul Roscoe	Illinois
Conaty, Thomas James	Massachusetts
Conboy, Columbus	Indiana
Condon, John Joseph	Illinois
Condon, Leo James	Illinois
Condon, Frank Watrous	New Mexico
Conley, Roy Thomas	Michigan
Connerton, James William	New York
Connoly, James Joseph	Illinois
Connor, William Francis	Illinois
Connors, Francis Edward	Illinois
Conrad, Raymond John	Wisconsin
Conroy, Edward Thomas	New York
Conway, William Leo	Massachusetts
Cook, Charles Laurens	Illinois
Cook, Nathan Harold	Illinois
Cook, Herman Andrew	Oregon
Cook, John Daniel	Ohio
Cook, Leo Louis	Indiana
Coonley, Clinton George	Illinois
Corbett, Edward Arthur	Illinois
Corby, Jr., John	Missouri
Corcoran, Charles George	Illinois
Corcoran, John Blake	Illinois

Corrigan, Robert Murray	Missouri
Corrigan, Richard Fant	Missouri
Cosgrove, Patrick Thomas	Illinois
Cosgrove, Robert Wayne	Michigan
Costello, Emmett James	Indiana
Costigan, Michael	New York
Coughlin, Francis Edward	Illinois
Coyle, Arthur James	Indiana
Coyle, Matthew Aloysius	Wisconsin
Crandall, Jasper Murdock	Michigan
Craine, James Francis	Pennsylvania
Craven, Joseph Aloysius	Louisiana
Creegan, Charles	Oklahoma
Cremer, Bernard Virgil	Illinois
Cremer, Marcellus Adolph	Illinois
Crary, Blakely Arthur	Wisconsin
Crosby, Joseph Angel	Ecudaor
Crosby, William John	Ecuador
Cullen, Mark Aloysius	Wisconsin
Cullen, Rodney William	Ohio
Cullinan, Francis Leo	Pennsylvania
Cunningham, Jr., Christopher	New York
Cuny, Chester Charles	Illinois
Curtin, Leo Anthony	Ohio
Curtis, Daniel Carr	Illinois
Daley, Richard Daniel	New York
Daly, Eldon James	Alaska
Daly, Justin Cyril	New Jersey
Daly, Martin Benson	Ohio
Danforth, Peter	Michigan
Dant, John William	Kentucky
da Rocha, Ruy Marcos	China
Daugherty, Paul John	Ohio
Daugherty, Robert Joseph	Nebraska
Davies, Clifford Paul	Indiana
Davis, Archibald Patrick	Ohio
Davison, Michael Joseph	Illinois
Davison, William	Wisconsin
Deary, William Agnew	Washington
Decker, Theodore Louis	Minnesota
DeGree, Walter Bernard	Minnesota

De La Garza, Secunda Martin	Texas
De la Llata, Louis	Mexico
De la Torre, Antonio	Columbia
Delaney, Harold Richard	Oklahoma
Del Valle, Ramiro Fernandez	Mexico
Demos, Peter	Indiana
Denigan, William Edward	Wisconsin
Dennison, John Rexford	Iowa
Denny, Henry Edward	Connecticut
Dent, Floyd Frank	Ohio
Denvir, Edward Joseph	Illinois
De Stefano, Emilio	Illinois
De Stefano, Vincent	Illinois
Devers, Paul Francis	Pennsylvania
Devine, Thomas Bernard	Ohio
Devine, Richard Paul	Ohio
Dice, Gerald Dean	Indiana
Diener, Charles Norman	Wisconsin
Di Lorenzo, Secondino	Illinois
D'Isa, Ezra Louis Michael	New York
D'Isa, Frank Angelo Aloysius	New York
D'Isa, Robert Roberto	New York
Dixon, John Sherwood	Illinois
Dixon, Paul Goodrich	Illinois
Dohn, Bernard Charles	Michigan
Dohoney, Lawrence Francis	Wisconsin
Dollard, Thomas Vincent	New York
Donnelley, Arthur Morgan	Missouri
Donnelly, Richard Morrill	Missouri
Donnelly, Jefferson Aloysius	Missouri
Donnelly, Edwin Charles	Ohio
Donahue, John	Michigan
Donohue, Edward Brown	Wyoming
Donahue, James Francis	Pennsylvania
Donahue, William Joseph	Illinois
Donohue, John Thomas	Illinois
Dooley, Charles Cameron	New Jersey
Dooly, Richard William	Utah
Dorais, Joseph Emery	Wisconsin
Doran, Michael Edward	Indiana
Dore, Richard Stanley	Washington, D. C.
Dorsey, Francis James	Washington, D. C.

Dorwin, Oscar John	Wisconsin
Douglas, Walter Joseph	New York
Douthitt, Paul Schuyler	Indiana
Dower, James Patrick	New York
Downes, Joseph Frederick	Indiana
Downey, Gerald William	Illinois
Downey, Raymond John	Illlnois
Downey, Henry Deloise	Indiana
Downey, Henry Patrick	Indiana
Downey, Philip Geiger	Indiana
Doyle, John Patrick	Wisconsin
Doyle, Robert James	Missouri
Doyle, Francis Henry	Missouri
Du Bois, Leo Vital	Oklahoma
Ducey, Walter James	Michigan
Duffy, John Edward	Indiana
Duffy, John Edward	Illinois
Duffy, Thomas Calasanctius	Rhode Island
Dugan, Paul Meath	New York
Dumkowski, Eugene Matthew	Indiana
Dunbar, Robert Gordon	Indiana
Duncan, Archibald Milton	Wisconsin
Dundon, Edward Joseph	Michigan
Dunn, Edward Patrick	Wisconsin
Dunn, Richard Joseph	Illinois
Dupuis, Silas Arthur	Michigan
Durnin, James Augustus	New York
Dwyer, Harold Richard	Illinois

Eagan, John Henry	Indiana
Early, Francis William	Illinois
Early, Michael James	Oregon
Edgren, Paul Eugene	Indiana
Edmondson, Delmar Joseph	Ohio
Egan, Charles Michael	Indiana
Egan, Frank Cyril	Illinois
Egan, William Joseph	Ohio
Eigelsbach, William Ernest	Indiana
Eigelsbach, Carl Frederick	Indiana
Eilers, Mark Gerard	New York
Eiseman, Vollmer Solomon	Illinois
Ellis, Howard De Shone	Illinois

Erskine, James Alexander	Michigan
Erskine, Chester Thomas	Michigan
Evans, Edward Thompson	Wisconsin
Evans, Leonard Delbert	Iowa

Fabrega, Calixto Jose	Panama
Fagan, Vincent Francis	Massachusetts
Falk, John Joseph	Wisconsin
Fallon, Thomas Aloysius	Ohio
Fallon, Regis	Ohio
Falvey, Francis Charles	District of Columbia
Farrell, Hugh John	New York
Farrell, Jr., Thomas Francis	New York
Farren, Walter Joseph	Ohio
Farrington, Francis Sherman	Wisconsin
Farwick, Arthur Francis	Ohio
Fasenmeyer, Jr., Anthony Charles	Kansas
Feiwell, Samuel	Indiana
Feldott, Joseph John	Illinois
Fenelon, John Patrick	Pennsylvania
Fenelon, Joseph Henry	Wisconsin
Fenlon, Paul Ignatius	Pennsylvania
Fennessy, Thomas Joseph	Illinois
Ferran, Leopold Charles	New Mexico
Finnup, Alonzo Edward	Kansas
Finske, Louis John	Indiana
Fischer, Francis Xavier	New York
Fisher, Royal Wilbur	Indiana
Fitz, John	Ohio
Fitzgerald, John Dean	Illinois
Fitzgerald, John Thomas	New Jersey
Fitzgerald, Leo Bernard	New York
Fitzgerald, William James	Illinois
Fitzgerald, Maurice	Connecticut
Fitzgibbon, Donald Thomas	Iowa
Fitzpatrick, Edward Bryan	Illinois
Fitzpatrick, Edwin Daniel	Wisconsin
Fitzpatrick, George Michael	Michigan
Flaherty, Frank James	Indiana
Flanagan, Joseph Myron	Wisconsin
Flanagan, Leo John	Illinois
Flannery, John Sylvestre	Pennsylvania

Fleischman, Roy Mark	Illinois
Fletter, Robert Dale	Michigan
Flood, Leo Francis	West Virginia
Flynn, Gerald John	Michigan
Flynn, Joseph Francis	Indiana
Fogarty, James Anthony	Idaho
Fogarty, William Stephen	Idaho
Fogarty, James Paul	Indiana
Foley, Harold Scanlan	Louisiana
Follett, Louis Henry	Pennsylvania
Follett, Robert Edward	Pennsylvania
Follett, Judson George	Iowa
Foohey, John Paul	Indiana
Ford, Thomas Daniel	Illinois
Forga, Alfred	South America
Forhan, Frederick Edward	Illinois
Fox, Kenneth Biglin	New York
Fox, William Francis	Indiana
Franciscovich, Frank Michael	Oregon
Frantz, George Franklin	Wisconsin
Fricke, Louis John George	Indiana
Fricker, George Augustin	Ohio
Friedman, John Henry	Indiana
Fritch, Louis Chrales	Illinois
Fritz, Henry William	Illinois
Fucik, Jr., John	Illinois
Furey, William James	Indiana

Gallagher, Joseph Edward	Washington
Galloway, Robert Patrick	New York
Gardiner, John Francis	Idaho
Garry, John Joseph	Virginia
Gates, Ralph	Illinois
Gaukler, Claire Robert	Michigan
George, Raymond LeRoy	Oklahoma
Gervais, Felix	Minnesota
Gervais, Vincent Ambrose	Minnesota
Gibasiewicz, Leonard Peter	Illinois
Gibbons, Hugh Thomas	Iowa
Gibbons, Joseph Aloysius	Pennsylvania
Gibbons, Thomas Henry	Illinois
Giblin, Creston	Alabama

Giblin, Vincent Claude	Alabama
Gilfillan, Earl Henry	Illinois
Gipp, George	Michigan
Girardin, Raymond Eugene	Michigan
Glahe, Frederick William	Illinois
Glascott, Lorenzo Alexander	Indiana
Gleason, John Francis	Ohio
Glynn, Thomas Joseph	Indiana
Godes, Harry Francis	Iowa
Gonzalez, Manuel	Arizona
Gonzalez, Jose	Cuba
Gonzalez, Rafael	Philippine Islands
Godall, Francis Peter	Ohio
Goodpaster, Harold Lester	Illinois
Gooley, Philip Edward	New York
Gorby, John	Indiana
Gorby, Robert	Indiana
Gorman, Brendan Ignatius	Illinois
Gorman, Lawrence Oswald	Illinois
Gorman, Thomas Henry	Ohio
Gormley, Paul Welch	Indiana
Grabner, Henry Charles	Indiana
Grace, John Leo	Indiana
Graf, Frank	Indiana
Graf, George Esty	Indiana
Graham, Raymond John	Illinois
Graner, Lawrence Leo	Pennsylvania
Grant, Donald Chester	Indiana
Grant, Edward Howard	Illinois
Grant, Jack Adrian	Illinois
Grego, Anthony Louis	Illinois
Grey, Donald, Matthew	District of Columba
Griesbach, Edwin Carl	Illinois
Grimes, Charles Aloysius	Rhode Island
Grupa, John Stanley	Minnesota
G'Sell, George Henry	Illinois
Guendling, John Edmund	Indiana
Guilfoyle, Lucien Thomas	Indiana
Gut, Wladylaus John	Ohio
Haberer, Bernard Villars	New York
Hackett, Geogre Mark	Kentucky

Hagan, Paul Joseph	Montana
Haller, George Dewey	Michigan
Halloran, Aaron James	Ohio
Halmes, George Nicholas	Nebraska
Halsema, Lambert Joseph	Indiana
Hamon, Albert Joseph	Montana
Hand, Gilbert Philip	Wisconsin
Handelsman, Henry J	Illinois
Handelsman, William J	Illinois
Haney, Bernard Edward	Indiana
Hanifin, Thomas Joseph	Ohio
Hanley, William Michael	Illinois
Hanlon, James Francis	Colorado
Hannon, Robert Eugene	Wisconsin
Hannon, Emmett David	Kentucky
Harbeke, Cyril Cortland	Illinois
Harbert, George Edwin	Illinois
Harl, Louis Patrick	Kentucky
Harmon, Louis Vincent	New York
Harrington, Frank	Nebraska
Harrington, Edward Marquette	Illinois
Hart, Francis Patrick	Illinois
Hauck, Clayson Jacob	Indiana
Havey, William Cornelius	Indiana
Hawley, Carlyle Edward	Minnesota
Hawley, John William	Illinois
Hayes, David Vincent	Connecticut
Hayes, Arthur James	Minnesota
Hayes, Frank Lambert	Illinois
Hayes, James Dawson	Indiana
Hayes, Robert Philip	Ohio
Healy, Thomas Francis	Ireland
Healy, Thomas Moritz	Iowa
Healy, Joseph James	Illinois
Healy, Thomas Dodd	Illinois
Hebert, Walter Jones	Arkansas
Hebert, Gaston Arthur	Arkansas
Heffernan, Bernard D	Indiana
Heidelman, Eugene J	Indiana
Heider, Joseph Anthony	Iowa
Heimann, Joseph Vincent	Ohio
Heinrich, Wolfgang Arthur	New York

Heiser, Leo James	Indiana
Helfrich, Arthur William	Pennsylvania
Hellert, Louis Henry	Indiana
Helmen, Vernon Reuben	Indiana
Henehan, Thomas Patrick	Pennsylvania
Henry, Patrick William	Illinois
Herlehy, Edward Clarence	Michigan
Herman, John Lincoln	Illinois
Hernan, Francis John	Indiana
Herrmann, Harlan Orville	Illinois
Hesch, Arthur	New Mexico
Higgins, Joseph Alexander	Connecticut
Hilgartner, Jr., Daniel Edward	Illinois
Hoarty, Verdin Thomas	Illinois
Hoban, Thomas Jefferson	Illinois
Hodkin, Samuel Jerry	New York
Hoerr, William Kenneth	Minnesota
Hogan, Paul Joseph	Illinois
Hogan, James Edward	Pennsylvania
Hogan, James William	Illinois
Holden, George Francis	Indiana
Holden, Philip	Indiana
Holderith, George Leo	Indiana
Holland, Thomas Vincent	Kansas
Holslag, Frank William	Illinois
Holton, James Barry	Texas
Hope, Arthur Barry	Illinois
Hoppe, Frederick Daniel	Wisconsin
Horton, James	Michigan
Hosinski, Edward	Indiana
Hosking, James Willard	Michigan
Howard, Arthur John	Indiana
Howath, Emery	Indiana
Howell, Charles Arthur	Illinois
Howley, Carlyle Edward	Illinois
Huber, Charles Russell	Ohio
Huber, Edward Timothy	Ohio
Huber, Robert Edward	Indiana
Hughes, Arthur John	Illinois
Hughes, Charles Parnell	Illinois
Hummert, Lawrence William	Illinois
Hungerford, Russell William	Pennsylvania

Hunter, Arthur Burton	Indiana
Hunter, Edwin Walter	Indiana
Hurley, Francis John	Illinois
Huxford, Jr., James Hygenies	New York
Hyland, Justin Edward	New York
Hyland, Richard Vincent	New York
Hynes, William James	Iowa

Insley, Stanley Willett	Michigan
Irving, John Ambrose	Wisconsin

Jackson, James Madison	West Virginia
James, Clarence Joseph	Pennsylvania
James, Llewellyn David	Missouri
Jameson, John James	Illinois
Jankowski, Sigismund Aloysius	Indiana
Jimenez, Raul	Republic of Panama
Johnson, John Paul	Indiana
Johnson, Nicholas Stanislaus	Illinois
Jolly, James Ryan	Rhode Island
Jones, Leo John	Michigan
Jones, Francis David	Pennsylvania
Jones, Charles Warren	Indiana

Kalish, William Jerome	Illinois
Kane, Edward William	Illinois
Kane, Edwin Lyle	California
Kane, Joseph Ingersoll	Illinois
Kane, Willard George	Illinois
Kasper, Thomas Cyril	Minnesota
Kazus, Maximilian Gregory	New York
Keady, Maurice Bernard	New York
Keane, Frank A	New York
Keatts, Jr., Henry	Arkansas
Keegan, Daniel Paul	Illinois
Keenan, Francis Joseph	Illinois
Keenan, Frederick Godfrey	Indiana
Keenan, Hubert Frederick	Wyoming
Kehoe, Edward Joseph	Ohio
Keller, Francis Xavier	New York
Kelley, William Henry	Indiana
Kelly, Edward Joseph	Rhode Island

Kelly, Thomas Armond	Illinois
Kelly, Clement Vivian	Alabama
Kelly, Herbert Barrett	Alabama
Kelly, Francis Kernan	Michigan
Kelly, Harry Francis	Illinois
Kelly, Thomas Clark	Wisconsin
Kelly, Jr., William Henry	Indiana
Kelly, Emmett John	Illinois
Kemp, Albert Joseph	New York
Kempel, Lawrence Henry	Ohio
Kennedy, William Edward	Illinois
Kennedy, Paul Lyttle	Illinois
Kenny, Francis Patrick	New York
Kenny, Thomas Augustus	New York
Kenny, William Francis	New York
Kenny, Edward Joseph	New York
Kenny, Gerard Joseph	New York
Keyes, William Howard	Ohio
Kiernan, Jr., Frank	Oregon
Killeen, Thomas Joseph	Minnesota
Killelea, John Gregory	Illinois
Kinerk, Louis Armond	Indiana
King, Francis Christian	Illinois
King, Thomas Henry	Indiana
King, Michael James	Oklahoma
Kintz, Charles Otto	Indiana
Kintz, Paul Joseph	Indiana
Kintz, Peter Kuhule	Indiana
Kirby, James John	Illinois
Kirkland, Frank Monroe	Oregon
Kline, Clarence Joseph	Pennsylvania
Kline, James Edward	Indiana
Kolb, Louis Charles	Kentucky
Kolf, Ralph Eugene	Illinois
Kommers, Frank I	Illinois
Koontz, Edward Jordan	Indiana
Kramer, John Edward	New York
Kramer, Walter Francis	Missouri
Kranz, Albert John	Ohio
Kreidler, Carl Henry	Indiana
Kremer, Frank Fehr	Kentucky
Krueger, Walter Frederick	Indiana

Krumholz, Euceladus Philip	Michigan
Krumholz, Cornelius Sylvestre	Michigan
Krumholz, Eusebius Charles	Michigan
Kruyer, Walter Bernard	Indiana
Kuhle, Otto Theodore	South Dakota
Kwist, John Jammis	Indiana

Lacy, William Hiram	Missouri
Lagan, Randall Clifford	Indiana
Lahey, Thomas Aquinas	Indiana
Lahey, William Patrick	Illinois
Laibe, Casimir Francis	Illinois
Lalley, Edward James	Minnesota
Lamb, Vincent Joseph	Illinois
Lammers, Martin William	Michigan
Landers, Walter B.	Missouri
Lane, Bernard Aloysius	Michigan
Lang, Hugo Emmerie	Nebraska
Lang, George Aloysius	Indiana
Lang, Robert Lee	Kentucky
Langan, Francis Joseph	Illinois
Langlois, Napoleon Edward	Michigan
LaPonsey, Charles Gabriel	Michigan
Lapperre, Edward Richard	Illinois
Larrazola, Octaviano	New Mexico
Lauerman, Frank Joseph	Wisconsin
Lauerman, Raymond Marshall	Wisconsin
Lavery, Hugh Thomas	Connecticut
Lawless, Charles Frederick	Indiana
Lawless, Richard Francis	Indiana
Lawless, William Francis	Delaware
Lea Mond, Arthur James	New Jersey
Le Blanc, George Anthony	Michigan
Leibert, Julius Amos	Indiana
Lenahen, Hubert	Illinois
Lemmer, John Ausust	Michigan
Lenihan, Emmett George	Iowa
Leoni, Paul John	Illinois
Leopold, Walter Joseph	Illinois
Lepore, Donato	Connecticut
Leser, Emmett John	Ohio
Leslie, Humphrey Louis	Iowa

Lewis, Lawrence James	Michigan
Lewis, Joseph William	Iowa
Lightfoot, Edwin Richard	Illinois
Lillis, Jack Joseph	Pennsylvania
Lindeman, Joseph Francis	Indiana
Lindeman, Edward George	Indiana
Lisewski, Stanislaus Francis	Illinois
Lish, Peter Francis	North Dakota
Lockard, Frank Robert	Ohio
Locke, Archibald David	Arkansas
Locke, Lucien Post	Arkansas
Lodesky, Joseph Anselm	Illinois
Loesch, Carl Raymond	Ohio
Loftus, Harold James	Illinois
Logan, James Patrick	Colorado
Logsdon, Horace Reardon	Illinois
Loosen, Julius Paul	Oklahoma
Lower, John Donald	Indiana
Luby, John	Indiana
Lucia, Charles Edward	Massachusetts
Luken, Ray Whitlow	Michigan
Lydon, Arthur William	New York
Lynch, Robert James	Missouri
Lynch, Joseph	Michigan
Lynch, Adrian Ryan	Iowa
Lyons, William Joseph	New York
Lyons, Thomas Francis	Michigan
Lynn, Austin Hawkins	New York
MacGregor, Donald Patrick	Indiana
Madero, Gustavo Adolfo	Mexico
Madden, John Dewey	Wisconsin
Madigan, Edward Patrick	Illinois
Magee, James Edmund	Illinois
Maguire, Leo Joseph	Illinois
Mahaffey, Frederick Leo	Indiana
Maher, William Kelty	New Jersey
Mahoney, John Frank	Wyoming
Makielski, Stanislaw J	Indiana
Maley, Edward	Pennsylvania
Maley, Raymond J	Pennsylvania
Malone, Grover John	Illinois
Malone, James Redmond	Illinois

Mang, Vincent	Ohio
Mangan, Michael	Ireland
Mangin, Joseph A.	New Jersey
Markey, Paul Thomas	Pennsylvania
Maroney, Jr., Larry	Colorado
Marshall, Frank Bernard	Illinois
Martin, Jerome Patrick	Wisconsin
Martin, Joseph Ignatius	Wisconsin
Martin, Frank John	Illinois
Martin, Walter James	Illinois
Martin, Francis Andrew	Michigan
Martin, William George	Illinois
Martinez, Jose (Gomez)	Mexico
Marvin, George Strong	Oklahoma
Massucco, John Dominic	Vermont
Masterson, Francis Bernard	Rhode Island
Mathiasch, Albert Joseph M.	Indiana
Mauer, Henry Lauhoff	Michigan
May, Arthur Lawrence	Indiana
May, Sherman	Wisconsin
Mayer, Leonard Frank	Wisconsin
Meagher, John Francis	Illinois
Meehan, Edward John	Pennsylvania
Menden, Bertram McA.	New York
Menden, William Ottoman	New York
Merriman, Clifford A.	Illinois
Merrion, Joseph Edward	Illinois
Merrion, Eugene Valentine	Illinois
Mersch, Victor Sylvester	Indiana
Meyer, Joseph Albert	Ohio
Meyers, John Sinnott	Kentucky
Micinski, Leo John	Indiana
Mileski, Frank Joseph	Michigan
Miley, Henry Roy	Ohio
Miller, Donald Joseph	Indiana
Miller, Earl Patrick	Ohio
Miller, Ward Anthony	Ohio
Miller, Walter Riley	Ohio
Miller, Rudolph John	Ohio
Miller, Pierre A.	Iowa
Miller, Jerome John	Indiana
Miller, John Milton	Illinois

Miller, Harry Walter	Ohio
Minavio, John Edward	New York
Mohan, Elmer Joseph	Illinois
Moleski, Jr., Andrew	New York
Molony, Richard E	California
Momsen, Gus Joseph	Texas
Monaco, Edward	Illinois
Monighan, Francis Patrick	Pennsylvania
Monning, Norbert G	Tennessee
Monning, Paul Hardley	Missouri
Moody, Francis Joseph	Illinois
Moody, Richard Paul	Illinois
Mooney, Felix Patrick	Illinois
Mooney, Edward Vincent	Pennsylvania
Mooney, Charles Patrick	Tennessee
Moore, Philip Samuel	Indiana
Moore, Arthur James	Ohio
Moore, Michael Elwyn	Illinois
Moore, Thomas Louis	Illinois
Morales, Alfred Edward	Texas
Morales, Ignatius	Mexico
Moran, Edgar Francis	Oklahoma
Moran, John Francis	Ohio
Morency, Henry Lloyd	Michigan
Morgan, Lawrence Byrne	Illinois
Morris, Samuel Milton	Illinois
Morrison, Charles Welstead	Illinois
Morton, Edward Joseph	Wyoming
Mott, Thomas Dillingham	Indiana
Moynihan, Andrew Joseph	Indiana
Muckenthaler, Joseph Aloysius	Indiana
Muckerman, Richard C	Missouri
Mulcaire, Michael Aloysius	Ireland
Mulholland, Clement B	Iowa
Mullaley, William Joseph	Illinois
Mullen, Thomas J	New Jersey
Mullen, William Patrick	Nebraska
Mulligan, Francis E	New York
Mulqueen, Leo Francis	New York
Mulvaney, Robert	Wisconsin
Murch, Raymond Martin	Michigan
Murphy, Ambrose Joseph	Wisconsin

Murphy, Clarence H.	Michigan
Murphy, Stephen Joseph	Michigan
Murphy, Cornelius L.	Oregon
Murphy, Eugene Leonard	Oregon
Murphy, Francis Joseph	Indiana
Murphy, Frank Aloysius	New York
Murphy, George Louis	Minnesota
Murphy, Michael P.	Illinois
Murphy, Jeremiah Emmett	Connecticut
Murphy, James Edward	Connecticut
Murphy, Thomas Fenton	Connecticut
Murray, Patrick Joseph	New York
Murray, Raymond William	Connecticut
Muser, Jr., Frank John	Missouri
Musmaker, John Lyle	Iowa
Myer, Robert James	Illinois

McAllister, Charles Anthony	Indiana
McAllister, Joseph Robert	Indiana
McAndrew, John Justin	New Jersey
McAndrew, Thomas William	New Jersey
McAuliffe, Robert H.	New York
McCabe, Clarence J.	Wisconsin
McCabe, Ray Joseph	New York
McCaffery, Ralph John	New York
McCaffery, Raphael Patrick	Ohio
McCarthy, John Francis	Montana
McCarty, Franklin (in absentia)	Illinois
McCauley, Charles Joseph	Tennessee
McConnell, Walton J.	Indiana
McDermitt, Francis F.	New Jersey
McDermott, Gerald A.	Illinois
McDermott, Gerard B.	Illinois
McDonald, James Harold	Illinois
McDonald, Leroy J.	Illinois
McDonald, William Breen	Illinois
McDonough, Andrew Leo	New Jersey
McEniry, Eugene Francis	Iowa
McFeeley, Edward William	New Jersey
McGahan, Leo John	New York
McGarry, Bernard Clairvaux	Ohio
McGinnis, Joseph Cyril	Illinois

McGirl, James Nathaniel	Missouri
McGlynn, Daniel Francis	Illinois
McGlynn, Robert Emmett	Illinois
McGonigle, Stephen Francis	Illinois
McGovern, Eugene L	Montana
McGrain, Francis Thomas	New York
McGrath, Arnold J	Illinois
McGreevey, James Charles	Illinois
McGreevey, William Joseph	Illinois
McGuire, James Emmett	Indiana
McGuire, Robert Gerald	Illinois
McInerny, Arnold Matthew	Indiana
McIver, Charles Joseph	Washington
McKay, Albert J	Oregon
McKeown, Charles William	Pennsylvania
McKenna, Jose William	New York
McKinley, Francis	Indiana
McKinnie, Fleming	Indiana
McLoughlin, Edward Manning	Michigan
McLoughlin, Lamont A	New York
McLoughlin, William N	New York
McMahon, James Torrance	Ohio
McManus, Thomas J	Illinois
McManus, William Allen	Illinois
McNabb, Clarence D	Wisconsin
McNally, Daniel Lawrence	Michigan
McNamara, William Michael	Illinois
McNamara, John Henry	Indiana
McNamara, Daniel Jefferson	Indiana
McNamara, William Carr	Indiana
McNeff, James Joseph	Illinois
McNeff, William John	Illinois
McNichols, Austin A	Illinois
McNichols, Harry Joseph	Illinois
McNulty, James Michael	Pennsylvania
McNulty, Morton Thomas	Indiana
McOsker, Edward Joseph	Illinois
McVey, William Patrick	Pennsylvania

Nagel, Vincent Anthony	Indiana
Napier, Aloysius	Michigan
Nash, Alton Glover	Michigan

Navin, Walter M.	Ohio
Neelan, Raymond F.	Pennsylvania
Neeson, James	Iowa
Neeson, William	Iowa
Nelson, Theodore Paul	Illinois
Nester, Harry Philip	Ohio
Neuses, Arthur William	Wisconsin
Neuses, Cyril Harold	Wisconsin
Niemier, Melchior Stanislaus	Indiana
Niezgodski, Stanislaus Alexander	Indiana
Nigro, Alfred Luigi	Illinois
Nolan, John Earl	Nebraska
Nolan, Frank DeSales	Ohio
Noonan, Gerard Michael	New Jersey
Noonan, William Joseph	Illinois
Norholdt, Jr., William Francis	California
Norris, Raymond Michael	Illinois
Nowakowski, Francis Joseph	Illinois

Oberholzer, Frederick G.	Ohio
Oberstella, Albert Hugo	Florida
Oberwinder, Helmuth A.	Illinois
Oberwinder, James R.	Illinois
O'Brian, William Crim	Indiana
O'Brien, William Joseph	Illinois
O'Brien, Donald Edmund	New York
O'Brien, Stewart Frederick	New York
O'Byrne, Joseph William	Colorado
O'Byrne, George	Colorado
O'Byrne, Thomas Elton	Alabama
O'Connell, Theodore William	Illinois
O'Connell, Eugene Daniel	Indiana
O'Connor, Earl Thomas	Pennsylvania
O'Connor, Edward James	Kentucky
O'Connor, Jeremiah P.	New York
Odem, Bryan Sylvester	Texas
O'Donnell, Leo Day	Pennsylvania
O'Donnell, Ray Joseph	Pennsylvania
Oehm, Roswell Peter	Indiana
O'Hara, Francis Joseph	Indiana
O'Hara, Joseph Patrick	Iowa
O'Hara, Robert Edward	Indiana

O'Hearne, John Edward	Illinois
O'Keefe, Joseph John	Pennsylvania
O'Keefe, Walter Michael	Connecticut
O'Laughlin, Robert Edward	Wisconsin
O'Laughlin, George Thomas	Wisconsin
O'Laughlin, James Henry	Iowa
Olivella, Felix	Philippine Islands
Oliver, John Patrick	Illinois
O'Meara, Thomas	Illinois
O'Neill, Jr., Hugh	Ohio
O'Neill, Howard John	Illinois
Ong, William San	Philippine Islands
Opitz, Bruce Harold	New York
Ord, Frank Bucholz	Indiana
Ormsby, Edward Paul	New Jersey
Orr, Brennen Robert	Illinois
Osborne, Lee Francis	Illinois
O'Shea, Maurice Joseph	Illinois
O'Sullivan, Patrick Clifford	Illinois
O'Sullivan, Albert S	Illinois
Otero, Augustine	Cuba
O'Toole, Eugene John	New Jersey
Overton, Charles Francis	Michigan
Ovington, Robert James	Ohio

Palmer, Cornelius Raymond	Illinois
Parish, Anthony Marsel	Illinois
Parker, Howard Russell	California
Parker, Leslie Eugene	Illinois
Parker, Joseph Wesley	Tennessee
Pasion, Bernardo Lapez	Philippine Islands
Paszek, Hilary Joseph	Indiana
Patterson, Dillon Joseph	Illinois
Paulger, Russell Dewey	Oklahoma
Peck, Arthur James	Colorado
Pedevilla, Juan Angel	South America
Pender, John Joseph	Ohio
Penner, Rolland A	Indiana
Perkins, Walter Eugene	Ohio
Perley, Harold Otis	Indiana
Perrone, John Frank	Indiana
Perrone, Pasquale Joseph	Indiana

Peterson, William E	Illinois
Peugnet, Amedie Joseph	Missouri
Peugnet, Hubert Aloysius	Missouri
Phelan, Mervin James	Oregon
Philbin, David	Oregon
Phillips, Roy John	Indiana
Pieper, Joseph Charles	District of Columbia
Pieper, Raymond Aloysius	District of Columbia
Plante, Victor Eli	Indiana
Porter, Thomas Joseph	Indiana
Powers, Jr., John Christian	Ohio
Powers, Patrick Gerald	Wisconsin
Powers, David John	Illinois
Przybysz, Joseph Ferdinand	Indiana
Purcell, William Francis	Missouri

Quijano, Eduardo A	South America
Quine, George William	Michigan
Quinlan, Daniel Joseph	New York
Quinlan, Franics P	Massachusetts
Quinlan, Frank Michael	New York
Quinlan, Timothy E	Ohio

Raab, John Michael	Indiana
Rademaker, Theodore Charles	Indiana
Railton, John Randolph	Illinois
Ralston, John Francis	Illinois
Ramacciotti, Albert	Nebraska
Rauth, Aaron Francis	Nebraska
Reading, Almon F	Michigan
Reading, Harvey Judd	Michigan
Reakirt, Edward Carleton	Missouri
Reardon, Charles William	Indiana
Reardon, George	Indiana
Reardon, Joseph	Indiana
Reed, James Michael	Ohio
Reeve, Andrew Bertram	Illinois
Reeve, Charles Burroughs	Indiana
Reeves, William Henry	Missouri
Reich, Felix Richard	Illinois
Reilly, William Peter	Michigan
Reinhardt, Jr., George	Missouri

Rentschler, John M	Pennsylvania
Restrepo, Bernardo	South America
Restrepo, Ramon	South America
Restrepo, Eliseo	South America
Restrepo, Jose Gabriel	South America
Restrepo, Gonzala	South America
Rettig, Frank Newton	Illinois
Rettig, Norman Joseph	Illinois
Reuss, John Louis	Indiana
Rey De Castro, Ezequiel,	South America
Rey De Castro, Jose Hector	South America
Reynolds, Edward Joseph	Vermont
Reynolds, George Edward	District of Columbia
Reynolds, John Joseph	Indiana
Reynolds, John Joseph	Vermont
Rice, William Edward	New York
Richards, Thomas Daniel	Michigan
Richwine, Harry A	Indiana
Rieder, Leo Peter	Indiana
Riley, John Urban	Massachusetts
Riley, Joseph Thomas	Michigan
Riley, Edward Clark	Nebraska
Rivas, Humbert Maximilian	Central America
Rivera, Jose M^a	Mexico
Roberts, Daniel Corben	Washington
Robinson William Henry	Indiana
Rodriquez, Rene	Central America
Roche, John Stephen	Ireland
Rogers, Joseph William	Missouri
Rohyans, Emmett Albert	Indiana
Rokosz, Boleslaus J	Illinois
Romano, Emilio Carl	Illinois
Ronchetti, Peter J	Illinois
Rooney, Eugene F	Illinois
Rosenthal, Joseph Dewey	Wisconsin
Rosselat, Enrique	South America
Rubio, Raphael Garcia	Cuba
Rudolph Simon Ray	Pennsylvania
Russell, Leon Thomas	Michigan
Ruzek, Oscar Emil	Michigan
Ryan, James Joseph	New York
Ryan, Edward Sylvester	Illinois

Ryan, James Hilary	New York
Ryan, James Joseph	Tennessee
Ryan, Joseph Francis	Indiana
Ryan, John Patrick	Illinois
Ryan, Paul Joseph	New York
Ryan, Paul Joseph	Pennsylvania
Ryan, Arthur Patrick	Illinois
Ryan, Eugene Carleton	Ohio
Ryan, Paul Joseph	New York
Rydzewski, Francis Xavier	Illinois

Sackley, Rigney J	Illinois
Saino, Felix Hugo	Tennessee
Salmstein, Herbert	Illinois
Sanchez, Manuel Gonzalez	Cuba
Sanders, John Albert	Ohio
Sandusky, Morris Edward	Illinois
Sanford, Joseph Francis	Michigan
Scates, Walter Dickinson	Illinois
Schaefer, Owen Worth	Michigan
Scheibelhut, Edward John	Indiana
Schenden, August John	Michigan
Schinkoeth, Le Roy	Illinois
Schlimgen, Lucien George	Wisconsin
Schlotzer, Ward Charles	New York
Schmitt, Walter John	Illinois
Schmitt, Eugene Robert	Minnesota
Schmitt, William Francis	New York
Schmucker, Walter Joseph	Texas
Schneider, Gerald Edward	Michigan
Schubert, Carl Edward	Indiana
Schwartz, Richard F	Illinois
Schwartz, Theodore	Ohio
Scofield, Paul	Ohio
Scott, Harry Edward	Indiana
Scott, John Stanley	Washington
Shanahan, George William	Ohio
Shanklin, Clarence Anthony	Illinois
Sheedy, Morgan F	Pennsylvania
Sheehan, Timothy Aloysius	Iowa
Shefferly, Lawrence J	Michigan
Sheridan, Arthur E	Iowa

Shields, Howard Joseph	New Jersey
Sidenfaden, Oscar Louis	Idaho
Silk, Joseph Henry	Illinois
Simons, Roger Charles	Illinois
Simpson, Thomas Hayes	Oklahoma
Sivan, Edmond Fenton	Illinois
Sjoberg, Ralph Eric	Illinois
Slackford, Frederick J	Ohio
Slaggert, Alfred N	Michigan
Slane, Harold Charles	New York
Slane, James Joseph	New York
Sloane, Ulrie	Ohio
Smart, Joseph John	Illinois
Smigel, Frank Joseph	Ohio
Smith, Frederick Peter	Illinois
Smith, Donald Wesley	Illinois
Smith, Delbert Devereux	Illinois
Smith, Frederick Donald	Kansas
Smith, J. Clovis (in absentia)	New York
Smith, Maurice F	Illinois
Smola, Frank Allen	Illinois
Snyder, Philip John	New York
Snyder, Russel Bernard	Ohio
Soldani, Clarence M	Oklahoma
Soldani, George Henry	Oklahoma
Sorenson, Charles Richard	Wisconsin
Spalding, Thomas William	Kentucky
Spears, Leonard Francis	Ohio
Spengler, Robert Ignatius	Mississippi
Spillane, John Owen	Pennsylvania
Staab, Joseph	Ohio
Stack, Raymond Francis	Wisconsin
Stafford, Marcellus J	Illinois
Stanley, Basil Lavon	Indiana
Stark, John Timothy	Minnesota
Starrett, Edwin M	Washington
Stephan, Lawrence S	Indiana
Steevens, Charles Andrews	Illinois
Sticelber, Paul K	Kansas
Stickney, Harold James	Illinois
Stine, Raleigh Jerome	Oregon
Strable, Lawrence Leo	Michigan

Strahan, William Speer	Michigan
Struhall, Louis James	Texas
Sugrue, Stephen Joseph	Illinois
Sullivan, John Francis	Illinois
Sullivan, George Leo	Montana
Sullivan, John Joseph	Massachusetts
Sullivan, Jr., John Joseph	New York
Sullivan, John Norton	Iowa
Sullivan, Lloyd Thaddeus	Indiana
Summers, Edward J	Indiana
Summerville, Francis Bond	Ohio
Susen, Benedict Paul	Illinois
Susen, William Hubert	Illinois
Suttner, Joseph Marshall	Washington
Swan, Edmond Fenton	Illinois
Sweeney, Frank Henry	Illinois
Sweeney, James Leo	Pennsylvania
Sweeney, Walter Aloysius	Indiana
Sweet, Philip Murray	Illinois
Swift, Paul Francis	Ohio
Swift, Leonard John	Ohio
Switalski, Raymond Charles	Ohio
Sylvestre, Edmond Eugene	Minnesota
Sylvestre, Joseph Harry	Minnesota
Szczepanik, Alexander Alfred	New York

Tappan, Ross	Indiana
Taylor, Ernest Samuel	Illinois
Teall, Lawrence Edmond	New York
Tebbe, Cyril Henry	Michigan
Terry, Robert Emmett	Wisconsin
Theiss, Harvey Leonard	Illinois
Thimmes, Paul Edward	Ohio
Thomas, Walter Raney	Tennessee
Thompson, Frank Emil	Illinois
Thompson, Joseph Hamilton	Tennessee
Thompson, Paul Roderick	Missouri
Thornton, Maurice John	Indiana
Tierney, Leo	Wisconsin
Tighe, John Forrest	Ohio
Ting, Paul Sun	Philippine Islands
Tinker, Jr., George Edward	Oklahoma

Tobass, Anthony John	Indiana
Tobin, Elmer Clayton	Indiana
Tobin, Paul William	Ohio
Tobin, Thomas Joseph	Pennsylvania
Tom, Edwin James	Texas
Torok, Joseph George	Indiana
Tracy, Thomas Francis	New York
Trainer, Daniel Francis	New Jersey
Trainor, Leo Joseph	Illinois
Trant, James Leo	Indiana
Trixler, Paul Gorman	Indiana
Trotter, Harold Rockwell	Canada
Trudelle, Matthew Eugene	Wisconsin
Truder, Thomas Vincent	New Mexico
Tye, Allan John	Illinois
Tyner, Richard Howard	New York

Usera, Vicente Carlos	Porto Rico
Uebbing, Albert Anthony	New York
Urquico, Jose	Philippine Islands

Valdes, Viviana L	Mexico
Valdes, Domingo Jose	Mexico
Valker, Leo Irvin	Minnesota
Vallez, Arthur Henry	Michigan
Van Aarle, Thomas	Ohio
Van Dyke, Lewis L	Illinois
Van Wonterghen, Augustus	Illinois
Vaquie, Marcellus Julius	Mexico
Vassallo, Walter	Canada
Vaughan, Vincent DePaul	Indiana
Vay, Arthur Lawrence	New York
Velasco, Gregorio	Philippine Islands
Velasco, Santiago	Philippine Islands
Verbiest, Christopher	Michigan
Victor, Stanley Hoffman	Wyoming
Voedisch, Hugo Henry	Indiana
Vogel, Leo Joseph	Pennsylvania
Voll, Bernard John	Ohio
Vonderhaar, Robert	Iowa
Vurpillat, Francis Jennings	Indiana

Wagner, Louis Edward	Kansas

Wagner, Theodore Paul	Missouri
Walker, William Brydon	Kansas
Wallace, James Gordon	New York
Walsh, Joseph	Ireland
Walsh, Sidney Joseph	Oklahoma
Walsh, Thaddeus John	Oklahoma
Walsh, Bernard Joseph	Illinois
Walsh, Francis Thomas	Illinois
Walsh, Herbert Mark	Illinois
Walsh, James Robert	Iowa
Walsh, Vincent Hugh	Montana
Walter, John Charles	Indiana
Walter, Frederick Martin	Illinois
Walter, Norman Louis	Illinois
Walter, William Joseph	Wisconsin
Ward, Leo Richard	Iowa
Ward, Gilbert James	Illinois
Ward, John Joseph	Pennsylvania
Ward, Lewis Leo	Indiana
Washabaugh, John Markham	Louisiana
Washabaugh, Theodore	Louisiana
Wathier, Roy Alexis	Illinois
Watson, Louis Latour	Indiana
Watson, Edward Dean	Indiana
Watson, Clair Kennedy	Wisconsin
Watson, Francis Duffy	Indiana
Watters, Edmund Dibrell	Idaho
Waters, Thomas Joseph	Massachusetts
Weber, John Joseph	Indiana
Weber, Robert Adam	Michigan
Weiland, Paul Edward	Ohio
Weiss, Joseph Francis	Illinois
Welch, Matthew John	Indiana
Welch, John Aloysius	Indiana
Welch, Lawrence Joseph	Indiana
Welch, Louis Edward	Michigan
Welsch, Leo John	Iowa
Welsch, James Aloysius	Illinois
Wenzel, William Leo	Kansas
Wesolek, Clement Jacob	Indiana
Wetzel, Edward Herrman	Louisiana
Whalan, Martin Anthony	Michigan

Whalen, Cornelius	Michigan
Wheeler, George John	Nebraska
Wheeler, James Hastings	Michigan
Whipple, Ray	Illinois
White, Lincoln Mitchell	Tennessee
White, Mansell John	Tennessee
White, Richard Mitchell	Tennessee
White, Joseph Edward	Illinois
Whitehead, Forrest Carl	Texas
Whitehead, William	Texas
Whittle, Harry Pierce	Illinois
Whittle, John Gillette	Illinois
Wilcox, Sylvestre Edwin	Kansas
Wilkins, Horace Marshall	Colorado
Williams, Jack Turner	Michigan
Williams, Leonard Gray	Michigan
Williams, Max	Illinois
Williams, Charles John	Illinois
Williams, Charles Paul	Illinois
Wilson, Charles	Illinois
Wilson, Luther Lowe	Indiana
Wilson, David	Illinois
Windoffer, George Frederick	Indiana
Wenninger, Francis	Indiana
Winkler, Frederick Charles	Indiana
Witteried, George Clemens	Illinois
Witucki, Casimir Joseph	Indiana
Witucki, Leo Andrew	Indiana
Wolf, Harold Leonard	Illinois
Wolf, Water Myrian	Illinois
Wolf, George Louis	Indiana
Wonn, Leslie William	Kansas
Wood, Joseph Eugene	New Mexico
Wood, Robert DeRoche	New Mexico
Wood, Robert Winthrop	Kentucky
Woods, Arnold Frank	Indiana
Woodworth, John Dominick	Indiana
Worman, Leonard John	Indiana
Worman, Robert Thomas	Indiana
Wrape, Valda Aloysius	Missouri
Wright, Harry Joseph	Ohio
Wyss, Francis Sylvester	Indiana

Yeager, Arnold Leslie	New York
Young, Thomas Brown	Kentucky
Young, John Spaulding	Kentucky
Zeller, Charles Alvin	Illinois
Zickgraf, Henry Paul	New York
Ziebold, Maximilian	Illinois
Zingheim, Clarence John	Minnesota
Zoia, Clyde John	Illinois

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SEVENTY-SECOND ANNUAL COMMENCEMENT

June 12, 1916

The Degree of Doctor of Laws was conferred

On a great priest whose zeal for religion is equalled only by his love of humanity, whose courage is as admirable as his character is kindly, a leader among the leaders of his people:

The Right Rev. Peter James Muldoon, Bishop of Rockford, Illinois.

On a beloved parish priest whose gift of noble utterance is combined with a whole-hearted devotion to his flock, acclaimed as a leader in his community and beloved as a father of his people:

The Reverend Charles Peter Raffo, of Louisville, Kentucky.

On a jurist of wide reputation, an orator of power and dignity, a type of all that is best in devotion to Church and country, a model citizen and Christian gentleman:

Martin Joseph Wade, of Iowa City, Iowa.

On a distinguished theologian whose pen has ever been active in the exposition of the truth, whose erudition is as broad as his character is simple, a distinguished educator and an exemplar of priestly virtue:

The Reverend Francisco Marin of the Order of Preachers.

On an eminently deserving educator whose noble example illustrates the virtues his eleoquent tongue inculcates:

The Reverend Philip Gallagher of Mount Saint Mary's Emmetsburg, Maryland.

On a scholarly citizen whose services to the commonwealth have not been inconsistent with an eager devotion to historical and literary work, and whose vindication of religious liberty and broad comprehension of American principles have proved eminently serviceable to his fellow citizens:

Mr. Edwin Orrin Wood of New York.

The Degree of Master of Science in Electrical Engineering was conferred on:

Lucius Buckley Andrus, South Bend, Indiana.

Thesis: "Constitutional Protection in Valuations of Public Utility Properties Under State Regulation; Public Utility Problems in Courts of Last Resort; Fair Value."

The Degree of Master of Science was conferred on:

William Joseph Corcoran, Portland, Oregon.

Thesis: "Clinical Application of the Anatomical Position of the Third, Fourth, Sixth and Eighth Cranial Nerve-nuclei."

Padre Manuel Fernandez, O. P., Ponchatoula, (Rosaryville), Louisiana.

Thesis: "Anatomy of Penaeus Setiferus (Edward) or 'Pawn-Shrimp.'"

Wilber Willace Sim, Nebraska City, Nebraska.

Thesis: "America's Greatest Undeveloped Natural Resource—Swamp and Marsh Lands."

Richard Vogt, South Bend, Indiana.

Thesis: "The Effect of Manganese on Muck Soils."

The Degree of Master of Laws was conferred on:

Henry Bartholomew Snyder, South Bend, Indiana.

Thesis: "Probate of Wills."

Leo Louis Tschudi, Dubuque, Iowa.

Thesis: "Taxation."

The Degree of Bachelor of Arts was conferred on:

Henry George Glueckert, South Bend, Indiana.
Walter Augustine Remmes, Andover, Massachusetts.

The Degree of Bachelor of Letters was conferred on:

Patrick Joseph Haggerty, Notre Dame, Indiana.
Raymond Murto Humphreys, Denver, Colorado.
John Hugh O'Donnell, Grand Rapids, Michigan.

The Degree of Bachelor of Philosophy was conferred on:

Robert Cushman Carr, Ottawa, Illinois.
James William Foley, Milford, Massachusetts.
Timothy Patrick Galvin, Pierceton, Indiana.
Arthur Burton Hunter, South Bend, Indiana.
Edward Nagel Marcus, LaFayette, Indiana.
William Beck Meuser, Dubuque, Iowa.
Joseph Harry Sylvestre, Crookston, Minnesóta.
Thomas Vincent Truder, Las Vegas, New Mexico.

The Degree of Bachelor of Philosophy in Journalism was conferred on:

Edward Joseph Beckman, Ottawa, Ohio.
Russell Hugh Downey, Churubusco, Indiana.

Wilmer Otis Finch, Rochester, New York.
Louis Patrick Harl, Owensboro, Kentucky.
Louis Frederick Keifer, Terre Haute, Indiana.
Eugene Richard McBride, Pittsburgh, Pennsylvania.

The Degree of Civil Engineer was conferred on:

Alfred Francis Fries, Grand Haven, Michigan.
Albert Anthony Gloeckner, Pomeroy, Ohio.
James Edward Hogan, Tipton, Indiana.
James Emmett Roach, Chicago, Illinois.
Emilio Raphael Salazar, Havana, Cuba.
Peter Charles Yerns, Rochester, New York.

The Degree of Mechanical Engineer was conferred on:

Edward Joseph Carleton, Corning, New York.
Freeman Charles Fitzgerald, Cosmopolis, Washington.
Frank Joseph Hiss, South Bend, Indiana.
Joseph Michael McGrath, Rochester, New York.
Joseph Henry Miller, Rochester, New York.

The Degree of Electrical Engineer was conferred on:

Robert Emmett Daly, Smethport, Pennsylvania.
Padre Dominico Matallana, O. P., Ponchatoula (Rosaryville), Louisiana.
James Michael Meara, Axtell, Kansas.
Braulio Antonio Munecas, Manzanillo, Cuba.
Charles Peter Mottz, Wellsville, Missouri.
Joseph James McCaffrey, South Bend, Indiana.
Frank Elmer Swift, Shenandoah, Iowa.

The Degree of Bachelor of Science in Architecture was conferred on:

Jacob Edward Eckel, Syracuse, New York.
Joseph Patrick Flynn, Rochester, New York.
Casimir Ignatius Krajewski, Chicago, Illinois.
William Wirt Turner, Washington, D. C.

The Degree of Bachelor of Science in Biology was conferred on:

Jeremiah Anthony McCarthy, Indianapolis, Indiana.

Bachelor of Science in Chemistry was conferred on:

Padre Candido Fernandez, O. P., Ponchatoula, (Rosaryville), Louisiana.
Frederick Michael Pralatowski, Rochester, New York.

The **Degree of Bachelor of Science** was conferred on:

John Francis Delph, Fairmount, Indiana.
Edward Christopher Ryan, Chicago, Illinois.

The **Degree of Bachelor of Laws** was conferred on:

Harold Peter Burke, Palmyra, New York.
William Ethelburt Bradbury, Robinson, Illinois.
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John Philip Conboy, Michigan City, Indiana.
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Erich Hans deFries, Davenport, Iowa.
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Joseph John Kovacs, Throop, Pennsylvania.
Hollis Edmund King, Broken Bow, Nebraska.
Luke Leo Kelly, Jamaica Plains, Massachusetts.
Ralph Jefferson Lathrop, Fennimore, Wisconsin.
Theodore John Lyons, Kansas City, Kansas.
Emmett Paul Mulholland, Gilmore City, Iowa.
George DeWald McDonald, LaGrange, Illinois.
Edward Vincent Mooney, Pittsburgh, Pennsylvania.
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Joseph O'Sullivan, Mound City, Illinois.
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Neil Vinson Robertson, South Bend, Indiana.
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Paul Joseph Smith, Indianapolis, Indiana.
Edwin Henry Sommerer, South Bend, Indiana.
Leroy Spencer, Russelville, Indiana.
Jose Antonio Urquico, Tarlac, Philippine Islands.
Martin Emmett Walter, Mt. Carmel, Illinois.
Frank Baird Welch, Kansas City, Missouri.

The Degree of Pharmaceutical Chemist was conferred on:

Jose Ferdinand Munecas, Manzanillo, Cuba.

The Degree of Graduate in Pharmarcy was conferred on:

Thomas Henry Curran, Belvidere, Illinois.
Stanislaus Nicholas Johnson, Ohio, Illinois.
Harold Andrew McConnell, Omaha, Nebraska.
Jorge Rodriguez San Pedro, Consolation del Sur, Cuba.

Certificates for the Short Program in Electrical Enginering were conferred on:

William Henry Ahern, Indianapolis, Indiana.
Walter L. G. Ashdown, Port Byron, Illinois.
Albert Joseph Freund, Meadville, Pennsylvania.
Rafael Diez Gutierrez, Potosi, Mexico.
Harry Bernard Jones, Vulcan, Michigan.
Emmett George Keefe, Raub, Indiana.
Leo Joseph Stephan, Scales Mound, Illinois.
Elmer Clayton Tobin, Elgin, Illinois.
Andrew Winfred Young, Wausau, Wisconsin.

Certificates for the Short Program in Mechanical Engineering were conferred on:

Rafael Diez Gutierrez, Potosi, Mexico.
John Stanley Scott, Ellensburg, Washington.

Certificate for the Short Program in Commerce was conferred on:

Logan Anthony Lanahan, Indianapolis, Indiana.

PRIZE MEDALS

The Quan Gold Medal, presented by the late William J. Quan of Chicago, for the student having the best record in the Classical program, Senior year, and a money prize of twenty-five dollars, gift of Mr. Henry Quan, in memory of his deceased father, was awarded to Henry George Glueckert, South Bend, Indiana.

The Meehan Gold Medal for the best English essay (Senior) presented by Mrs. Eleanor Meehan, of Covington, Kentucky, was awarded to Timothy Patrick Galvin, Pierceton, Indiana. *Subject:* "The Catholicity of G. K. Chesterton."

The Martin J. McCue Gold Medal, presented by Mr. Warren

A. Cartier, Civil Engineer, of the class of '77, for the best record for four years in the Civil Engineering program, was awarded to Emilio Rafael Salazar, Havana, Cuba.

The Dockweiler Medal for Philosophy, founded by Mr. Isidore B. Dockweiler of Los Angeles, California, in memory of his deceased father, for the best essay on some philosophical theme (Senior year) was awarded to Arthur Burton Hunter, South Bend, Indiana. *Subject:* "The Right to Life."

The Breen Gold Medal for Oratory, presented by the Honorable William P. Breen, of the class of '77, was awarded to Timothy Patrick Galvin, Pierceton, Indiana.

The Barry Elocution Gold Medal, presented by the Honorable P. T. Barry of Chicago, Illinois, was awarded to Charles McCauley, Memphis, Tennessee.

Forty-five dollars for debating work was awarded as follows: Twenty dollars to Timothy Patrick Galvin, Pierceton, Indiana; Fifteen dollars to Bernard Voll, Zanesville, Ohio; ten dollars to John A. Lemmer, Escanaba, Michigan.

Medals for debating were awarded to the following: Bernard Voll, Zanesville, Ohio; John A. Lemmer, Escanaba, Michigan; Michael Mulcair, New York City, N. Y.; George DeWald McDonald, LaGrange, Illinois; Oscar Dorwin, Minocque, Wisconsin; Francis Hurley, Woodstock, Illinois.

Ten dollars in gold for Junior oratory presented by Mr. James V. O'Donnell, of the class of '89, was awarded to Speer Strahan, Fife Lake, Michigan.

Ten dollars in gold for Sophomore oratory presented by Mr. James S. Hummer, of the class of '91, was awarded to Matthew Coyle, Madison, Wisconsin.

Ten dollars in gold for Freshman Oratory, presented by Mr. Hugh O'Neill, of the class of '91, was awarded to Thomas Francis Healey, Limerick City, Ireland.

PREPARATORY SCHOOL

The Gold Medal for Christian Doctrine, First Course, was awarded to Felix Patrick Mooney, Philo, Illinois.

The Gold Medal for Christian Doctrine, Second Course, was awarded to Eliseo Restrepo, Columbia, S. A.

The Mason Medal, donated by Mr. George Mason, of Chicago, to the student in the Preparatory School whose scholastic record has been the best during the school year, was conferred on Arthur Henry Vallez, Bay City, Michigan.

The O'Brien Gold Medal for the best record in Preparatory Latin, the gift of the Rev. Terence A. O'Brien of Chicago, was awarded to William Henry Robinson, Indianapolis, Indiana.

The Joseph A. Lyons Gold Medal for Elocution, was awarded to Edward Joseph Kelly, Pawtucket, Rhode Island.

Ten dollars in gold for Preparatory Oratory, presented by Mr. Clement C. Mitchell of the class of '04 was awarded to Cornelius Palmer, Chicago, Illinois.

Commercial High School Diploma was conferred on Manuel Jose Gonzalez, Havana, Cuba.

Commercial Course Diplomas were conferred on: Philip John Armstrong, Chicago, Illinois; Rudolph Joseph Rice, Meadville, Pennsylvania.

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On application to the President, Bulletins will be sent to all who are interested in the work of the University.

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